

DOCUMENT RESUME

ED 050 284

VT 013 096

AUTHOR Peters, James S., II; Grella, Frank C.
TITLE A Model Statistical Program for Vocational Rehabilitation.
INSTITUTION Connecticut State Dept. of Education, Hartford. Div. of Vocational Rehabilitation.
SPONS AGENCY Rehabilitation Services Administration (DHEW). Washington, D.C.
PUB DATE Jun 67
NCTE 86p.
EDRS PRICE MF-\$0.65 HC-\$3.29
DESCRIPTORS Administrative Agencies, *Data Processing, Interagency Coordination, *Management Systems, Program Evaluation, *Program Improvement, Rehabilitation Centers, Reports, State Programs, *Statistical Analysis, *Vocational Rehabilitation, Vocational Training Centers

ABSTRACT

This report is a culmination of a study whose purpose was to devise a model statistical program which would provide effective and useful statistical information for a vocational rehabilitation agency. The statistical data comes from internal as well as from external sources. The program must gather, analyze, evaluate, and report the data to serve both the daily operating needs and the long-range planning and research needs of vocational rehabilitation. Also, the statistical information can be used to improve and augment the services rendered to clients. The model statistical program must be staffed by competent research personnel who are capable of using data process techniques. Related documents are available as VT 013 092-013 095. (GEB)

ED050284

U.S. DEPARTMENT OF HEALTH, EDUCATION
& WELFARE
OFFICE OF EDUCATION
THIS DOCUMENT HAS BEEN REPRODUCED
EXACTLY AS RECEIVED FROM THE PERSON OR
ORGANIZATION ORIGINATING IT. POINTS OF
VIEW OR OPINIONS STATED DO NOT NECES-
SARILY REPRESENT OFFICIAL OFFICE OF EDU-
CATION POSITION OR POLICY

A
MODEL
STATISTICAL
PROGRAM
FOR
VOCATIONAL
REHABILITATION,



Division of Vocational Rehabilitation
State Department of Education
State of Connecticut

VT013096

ED050284

Prepared by:

James S. Peters, II, Ph.D.
Project Director

Frank C. Grella, M.A.
Project Coordinator

June, 1967

This investigation was supported, in part, by a Research Grant, Number R.D. 855, from the Vocational Rehabilitation Administration, Department of Health, Education, and Welfare, Washington, D.C. 20201.

TABLE OF CONTENTS

	Page No.
SUMMARY OF MAJOR OBSERVATIONS	
I. INTRODUCTION	1
A. Background of the Development of the Model Statistical Program	
B. Statement of the Problem	
C. The Setting	
II. SUMMARY OF METHODOLOGY	4
A. Work prior to 1966-67	
B. Use of the Systems Approach	
1. Need for statistics	
C. Application of the Systems Approach to Vocational Rehabilitation	
1. Definition of the Problem	
2. Statement of Objectives	
3. Process Design	
4. Process Operation	
5. Role of the Statistical Program	
III. USERS, SOURCES, AND FORMATS OF SUGGESTED STATISTICAL REPORTS	17
A. Statistical Requirements for Problem Definition	
1. Report No. 1: Case Load - Personal Data	
B. Statistical Requirements for Establishing Objectives	
1. Report No. 2: Classification by Work Status and Occupational Codes	
2. Report No. 3: Weekly Earnings at Acceptance and Closure.	
3. Report No. 4: Sum of Benefits Received	
4. Report No. 5: Social Security Disability Insurance	
5. Report No. 6: Public Assistance at Acceptance and Closure	

TABLE OF CONTENTS

	Page No.
C. Statistical Requirements for Process Design	
1. Report No. 7: Case Load Distribution, by Referral Source	
D. Statistical Requirements for Process Operation	
1. Report No. 8: Case Load Distribution by Counselor	
2. Report No. 9: Case Load Distribution by Counselor and Age Groups	
3. Report No. 10: Case Load Distribution by Counselor and Client's Status	
4. Cost Reporting	
E. Summary	
IV. RECOMMENDATIONS AND CONCLUSION	57
A. Place of the Statistical Program in the Division of Vocational Rehabilitation, State of Connecticut	
1. Services to Bureau of Rehabilitation Services	
2. Services to Bureau of Community and Institutional Services	
3. Services to Bureau of Disability Determination	
4. Services to Training and Communications Group	
5. Services to Rehabilitation Council	
6. Staffing of the Statistical Program	
B. The use of Automatic Data Processing Techniques	
C. Suggestion for Future Study -- Development of a Cost Matrix for Case Service Costs.	
D. Conclusion	
V. APPENDICES	76
A. References	
B. Bibliography	

SUMMARY OF MAJOR OBSERVATIONS

The report which follows is the culmination of a study which began in 1962. Its purpose was to devise a Model Statistical Program which would provide effective and useful statistical information for a Vocational Rehabilitation Agency. The need for such a program, in Connecticut, has become even more pressing with the increase in the case load and the resulting increase in budgets and personnel. Another indication of the growth in importance of Vocational Rehabilitation is the recent movement of Vocational Rehabilitation from a Bureau status to Division status within the Connecticut State Department of Education.

The requirements for statistical information are shown in this report as an integral part of a Vocational Rehabilitation System. In broad terms the Vocational Rehabilitation System includes the Statement of the Problem, the Establishment of the Objectives, the Design of the Process, and the Process Operation. The Model Statistical Program must provide statistical intelligence which serves the needs of these elements. The statistical data required by these elements come from internal sources within the Vocational Rehabilitation System as well as from sources external to the Vocational Rehabilitation System. The Statistical Program must gather, analyze, and evaluate these data and present them within an acceptable period of time, and in a readily understood format. Formats of particular reports and the time period in which they are to be prepared are shown in this report.

The Statistical Program must serve not only the daily operating needs but also the long-range planning and research needs of Vocational Rehabilitation. The Statistical program must be used to devise more meaningful budget and cost forecasts as suggested in Chapter IV of this report and it must also be used to inform legislators and others of the economic and social benefits which accrue to individuals and to the entire economy from Vocational Rehabilitation.

A Model Statistical Program is a vital tool for creating useful managerial information for internal control purposes. It is also a useful tool for disseminating information about the Vocational Rehabilitation System. In order to accomplish this purpose the Model Statistical Program must be staffed by competent, research personnel who are experienced in the use of statistical techniques and who are capable of adapting the most recent automatic data process techniques to the statistical problems of Vocational Rehabilitation. A recommendation for the staffing of a Statistical Program is included in this report.

Finally, the ultimate aim of a Statistical Program is to provide statistical information which can be used to improve and augment the services which are rendered to the clients of Vocational Rehabilitation. This improvement is the prime reason for the implementation of a Model Statistical Program.

INTRODUCTION

Background of The Development of the Model Statistical Program

It is the feeling of many persons concerned with the administration of public programs of vocational rehabilitation that the role of research and statistics has been grossly underemphasized and oversimplified in program analysis and planning, organization structuring, and in staffing, especially in the area of case load management. It is also felt that within these public rehabilitation agencies the meaning of "social research" has not been fully comprehended. The restrictions of time, space, and equipment imposed on the use of research and statistical data has led to a situation in which already overburdened administrative staff members were prevented from developing ways in which these data could be used more effectively in the internal processes of program planning, budget preparation, and personnel utilization. Consequently, the lack of a concerted statistical program has prevented these agencies from presenting an adequate summary of their overall performance to various legislative bodies, the public, private rehabilitation agencies, and other public agencies concerned with human welfare. Most important, however, this statistical gap has prevented these agencies from achieving their full potential in the vocational rehabilitation of the handicapped individuals they must serve.

Statement of the Problem

Essentially, then, the purpose of the project is to devise an effective Statistical Program for a public rehabilitation agency. The effectiveness of this program will be determined by its ability to provide the agency's needs for internal control statistics. In addition, the Statistical Program must collect and present statistical data to other agencies and groups which are affected by or have an interest in the work of a public rehabilitation agency.

What are these internal and external needs for statistical data? An early recommendation for more effective use of statistical data was made in "The Role of Statistics in State Vocational Rehabilitation Agencies".¹ This study, made under the

¹All Footnote references in Appendix A.

auspices of a prominent school of Graduate Social Study, recommended the use of statistics in:

1. Planning of program content
2. Budget preparation
3. Public relations
4. Effective administration
5. Case management.

It can be seen from the list shown above that a vocational rehabilitation agency is concerned with both the internally operating mechanisms of the vocational rehabilitation process as well as the environment in which the agency must operate. A significant recommendation of the present study will be that the Statistical Program be utilized as a communication tool within the organization, as well as a tool to be used for improved communications with the public, the legislature, and state and private agencies. The Statistical Program thus becomes an integral and vital part of the system or process of vocational rehabilitation.

The Setting

Vocational Rehabilitation in the State of Connecticut began as a one-man operation in 1929 when the State in cooperation with the Federal Vocational Rehabilitation Act began a modest rehabilitation program. In the year 1930 approximately 159 clients were served. In 1955 Vocational Rehabilitation served more than 3400 clients in Connecticut, and in 1965 this number had risen to more than 5500 clients. It is anticipated that by 1970 Vocational Rehabilitation will serve more than 10,000 clients in Connecticut alone.

The growth in the Vocational Rehabilitation program reflects the increased awareness of the many social and economic problems which exist even in an affluent society. The increased awareness of these problems and the conscious desire to alleviate them has led to the establishment of many new programs. It is not surprising then that these new or, in some cases, expanded programs have been subject to the closest scrutiny in terms of the definition of the problem they wish to solve, the process or operation which is established to solve the problem, and the results or final output of the program. The growth of Vocational Rehabilitation in terms of clients served, number of personnel employed, and increased budgets demands a more refined and a more thorough Statistical Program to help achieve truly meaningful results. While the Statistical Program can be justified by its impact on overall efficiency, the most important reason for its existence is to help increase services and benefits which will accrue to the clients being served.

It will be said by some that statistics cannot be applied in

situations where the human and humane aspects of the problem are of critical importance. This admonition should not deter an attempt to formulate a Statistical Program which considers certain inherent limitations within the basic data to be used. Indeed, the effect of the Statistical Program should not be to dehumanize the rehabilitation process but to increase the benefits achieved by the clients whom it serves. The objective of this present study is to stimulate the use of statistics as a means of improving the vocational rehabilitation process and, thus, aid the clients served by the process.

SUMMARY OF METHODOLOGY

Work Prior to 1966-67

The first phase of the project, Development of a Model Statistical Program for Vocational Rehabilitation, which began in 1962 involved orientation and appraisal of existing statistical programs, personal contacts with the Federal Office of Vocational Rehabilitation, and visits to other state vocational rehabilitation agencies.

The second phase of this project involved the determination of the statistical needs of a State Vocational Rehabilitation Agency for:

1. Program Planning
2. Agency Budget
3. Public Relations
4. Administration
5. Case Load Management
6. Legislative Action
7. Measuring Program Results
8. Delineating General Questions of Practical Action.

The third phase of the project involved determining the record, reporting, staffing, and equipment needs of the Statistical Program. A Movement Scale for measurement of client progress in rehabilitation and training, and an improvement of a "Screenometer" for determining rehabilitation potential of applicants were considered but never tested for final development. A model for collecting the required statistical data was also developed. This model was refined in a more useful form for consideration in field use during fiscal 1965-1966.

The fourth phase of the project involved the field testing of a revised Rehabilitation Data and Progress Report Form. The purpose of this form was to permit the analysis of a client's record from the time he applied for vocational rehabilitation services until the termination of services. Most of the data to be reported on this form were incorporated into the Revised Form R-300 "Case Service Report" State Federal Program of Vocational Rehabilitation which was placed into operation in July of 1966.

Further detail on the previous work done in this project is available from the Annual Progress Reports submitted for this project. These reports are cited in the Bibliography.

Use of the Systems Approach

As a result of the earlier work done on the Model Statistical Project, it became apparent that a unified approach or method had to be considered in the formulation of any statistical program. What should this approach be? It is recommended that this approach be a Systems Approach whose broad requirements will be sketched in this chapter and whose uses with reference to Vocational Rehabilitation will be delineated in the following chapter.

The Systems Approach is, in effect, a "management method" of looking at an organization as a process for solving a particular problem or problems. Traditionally, management techniques have been concerned with the problems of Organizing, Planning, Leading, and Controlling. For the purposes of this statistical model we can turn to the terminology used by Herbert A. Simon in his book, The New Science of Management Decision. In his analysis, Simon, a noted management authority, makes "management" synonymous with "decision making". He discusses three phases in decision making:

"The first phase of the decision making process--searching the environment for conditions calling for decisions--I shall call intelligence activity (borrowing the military meaning of intelligence).

The second phase--inventing, developing and analyzing possible courses of action--I shall call design activity.

The third phase--selecting a particular course of action from those available--I shall call choice activity." ²

These three phases, intelligence, design, and choice show a strong similarity to the typical problem solving stages of:

1. What is the problem?
2. What are the alternatives?
3. Which alternative is best?

It is implied in Simon's analysis that choice of an alternative is a decision and the implementing of this decision results in managerial activity which must be evaluated or controlled. Management control can be defined as:

"-----the process of insuring that what ought to be done is done and of detecting when it is not done." ³

The problem of achieving management control has become increasingly difficult and complex because of the growth in physical size and economic sophistication of private and governmental organizations. In an earlier and simpler economy the size of organizational units permitted an executive through a line of command to exercise control. However, effective control became more difficult to attain as organizations increased in size, and with time, a line and staff-type operation developed. However, this tended to fragmentize and compartmentalize managerial functions and decisions.

The Systems Approach is one in which an overall view is taken of a set of particular problems. Previous approaches tended to be restricted to the solution of problems within a departmentalized situation. Thus, the solutions of individual problems were not viewed within an overall organizational context but at the departmental level. For example, in Vocational Rehabilitation, Case Load Management could be viewed as a personnel utilization or a financial problem. In the Systems Approach these two aspects of the problem would be considered as parts of an interrelated system.

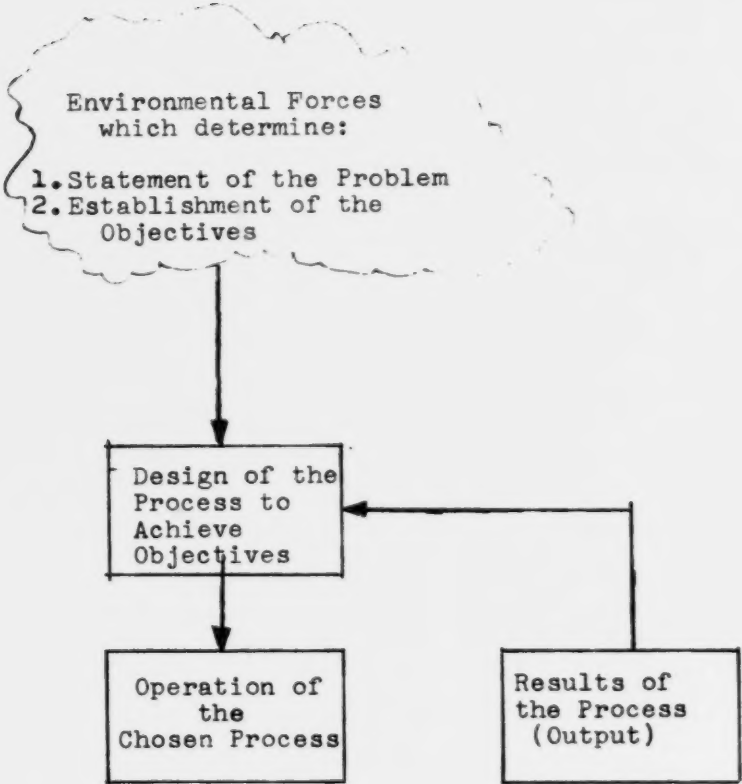
A summary of the Systems Approach may be taken from a recent, widely accepted publication in the field of systems analysis and design:

"Under the systems concept, the business organization is viewed as a series of parts which include the individual, the informal work groups, the formal organization and finally the environmental systems, which have a direct impact upon the business organization. Furthermore, under the systems concept consideration must be given to the means for interrelating and coordinating these various subsystems. These parts are intergrated through various processes such as the information and communications network, the decision systems, and built-in equilibrium mechanisms which exist in every organization." 4

A system, thus, is composed of a number of interrelated subsystems or elements brought together and controlled by decisions based on information flows. A system may be reduced to the elements of:

1. Statement of the Problem
2. Establishment of Objectives
3. Design of the Process to achieve Objectives
4. Operation of the Chosen Process
5. Results of the Process (Output).

Figure I, below illustrates this concept.



ELEMENTS OF A SYSTEM

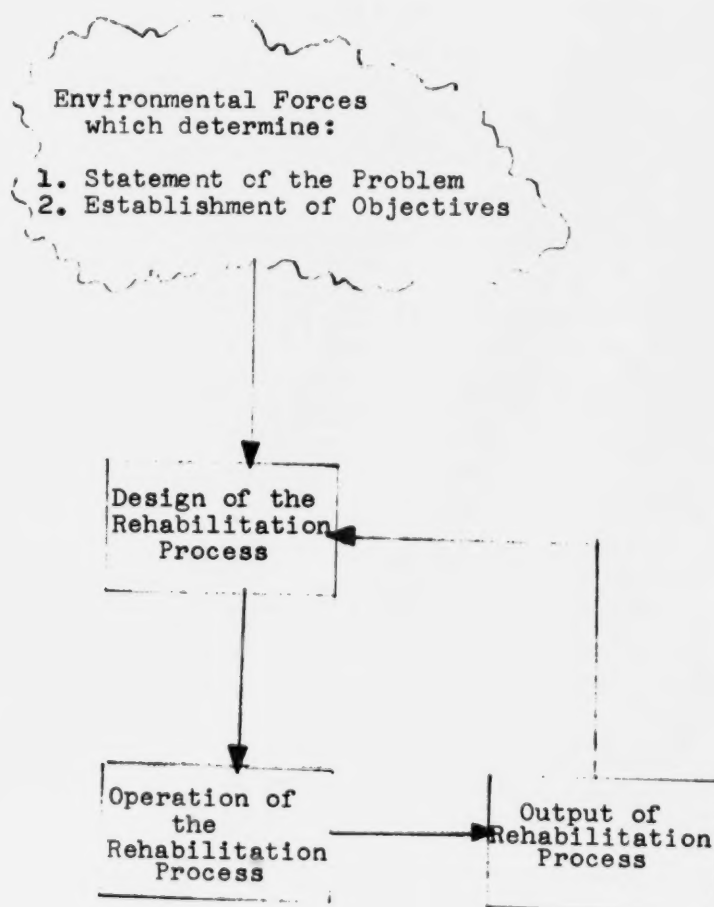
FIGURE I

In a physical system the Statement of the Problem and the Objectives can be expressed in quantitative terms. However, in systems in which the most important factors are human, social, and economic in nature, the Statement of the Problem and the Objectives are both quantitative and qualitative in nature. In Figure I, the quantitative and qualitative characteristics of the Problem and the Objectives are indicated by placing them within an irregularly-shaped figure. It becomes, then, the function of a Statistical Program to help quantify these elements so that the processes which follow can be more effectively organized. The Statistical Program must also include methods to interpret and evaluate the Results of the Process in relation to the Objectives which have been established.

Application of the System Approach to Vocational Rehabilitation

The Systems Approach, which includes a vital statistical function, can be applied to the problem of Vocational Rehabilitation. To use this concept, Vocational Rehabilitation must be viewed as a problem which because of its breadth requires both definition and determination of its scope. The problem is of such magnitude that it becomes necessary to establish a set of objectives or goals within certain eligibility requirements. These objectives are to be realized by the establishment of a process or system which must function within certain budgetary, time, and personnel limits. In turn, the output of this process or system must be compared to the original set of objectives. This comparison, or feedback, serves to judge the effectiveness of the vocational rehabilitation process.

Figure II portrays the Systems Approach applied to Vocational Rehabilitation. The Statement of the Problem and the Establishment of Objectives are again shown in an irregularly-shaped figure to indicate the uncertainty and difficulty associated with establishing these elements. It shows also the Design of the Rehabilitation Process, the Operation of the Rehabilitation Process, and the Results or the Output which serve as a control to determine whether the Objectives have been met.

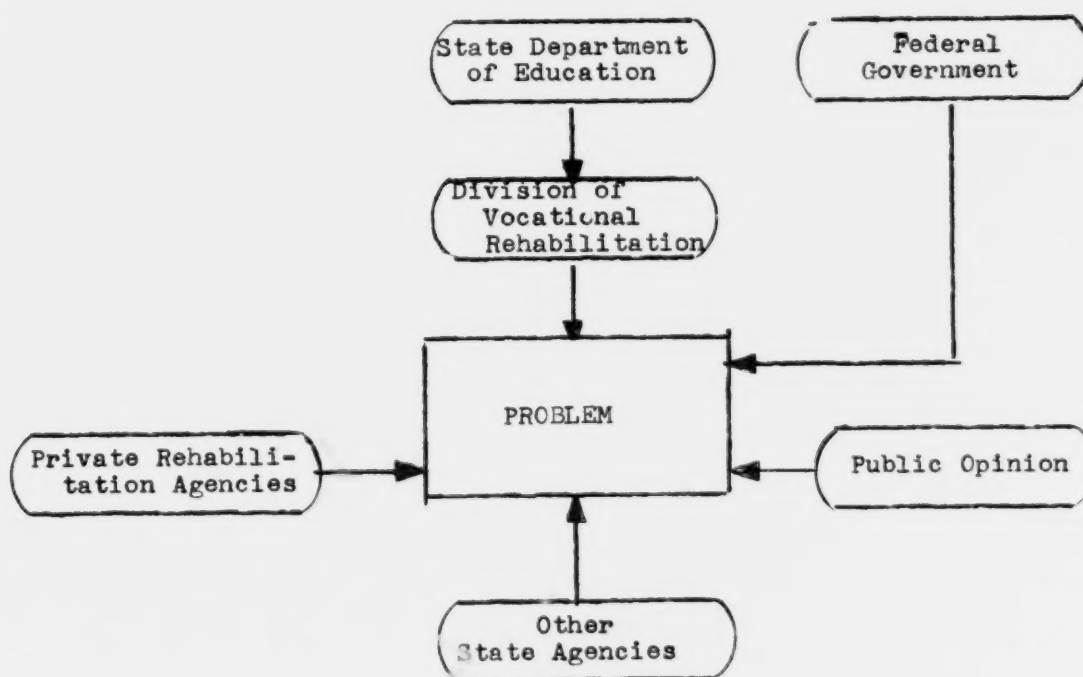


ELEMENTS OF THE VOCATIONAL REHABILITATION SYSTEM

FIGURE II

Each of the five elements in Figure II is a key function which requires statistical information. The functions and nature of each of these elements will determine the kind and quantity of statistical intelligence which the element requires. Each of these elements will be examined in the following pages.

Figure III, below, represents the formulation or Statement of the Rehabilitation Problem. The Statement of the Problem is the assessment of the need for rehabilitation services as viewed by the public, governmental, and private groups.



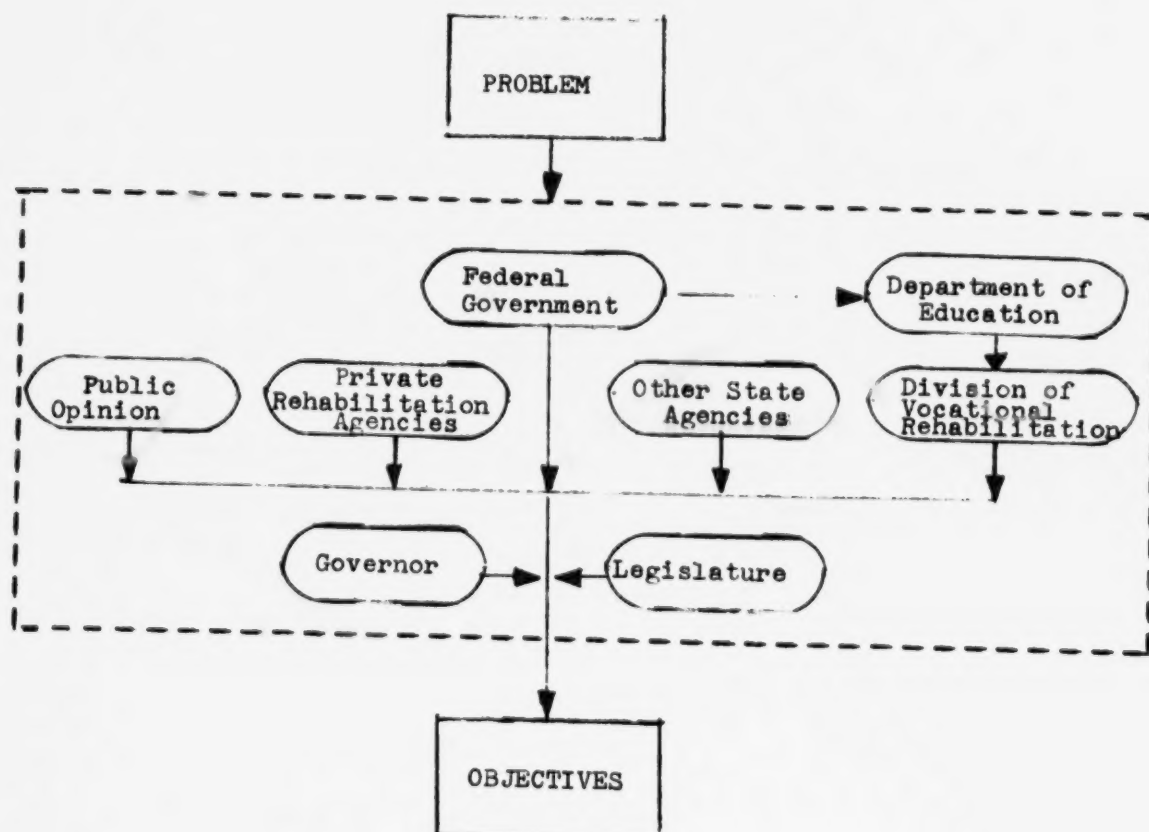
STATEMENT OF THE REHABILITATION PROBLEM

FIGURE III

To each group the problem represents a somewhat different aspect. For the private agencies the problem may be a particular disease or disability; for the Federal government the problem becomes one of determining vocational disability in relation to Social Security payments, or Veterans' needs; for state agencies, such as Welfare, the problem is one of reducing rolls of Welfare recipients by rehabilitation processes; for the State Employment Service the problem is that of finding employment for handicapped

workers; for the public the problem is on a more general level-- it is essentially the desire for humanitarian reasons to furnish aid to those who have been disabled and who require professional assistance in order to return them to a fuller participation in the world of work and society at large.

The second element to be expanded and examined is the Establishment of Objectives. The purpose of this subsystem is to formulate and pass on to the next subsystem, Process Design, the Objectives which the process designers will need in order to establish an ongoing rehabilitation process. (See Figure IV)



ESTABLISHMENT OF OBJECTIVES

FIGURE IV

Although each of these groups participates in the Establishment of the Objectives, the most important determinants of the Objectives, are the legislative acts of the Federal Government which are administered by the Vocational Rehabilitation Administration of the Department of Health, Education and Welfare. These legislative acts together with the legislative acts of the State of Connecticut, and the Governor's Budget, as finally approved by the State Legislature, determine the Objectives which the Vocational Rehabilitation Agency will be expected to achieve.

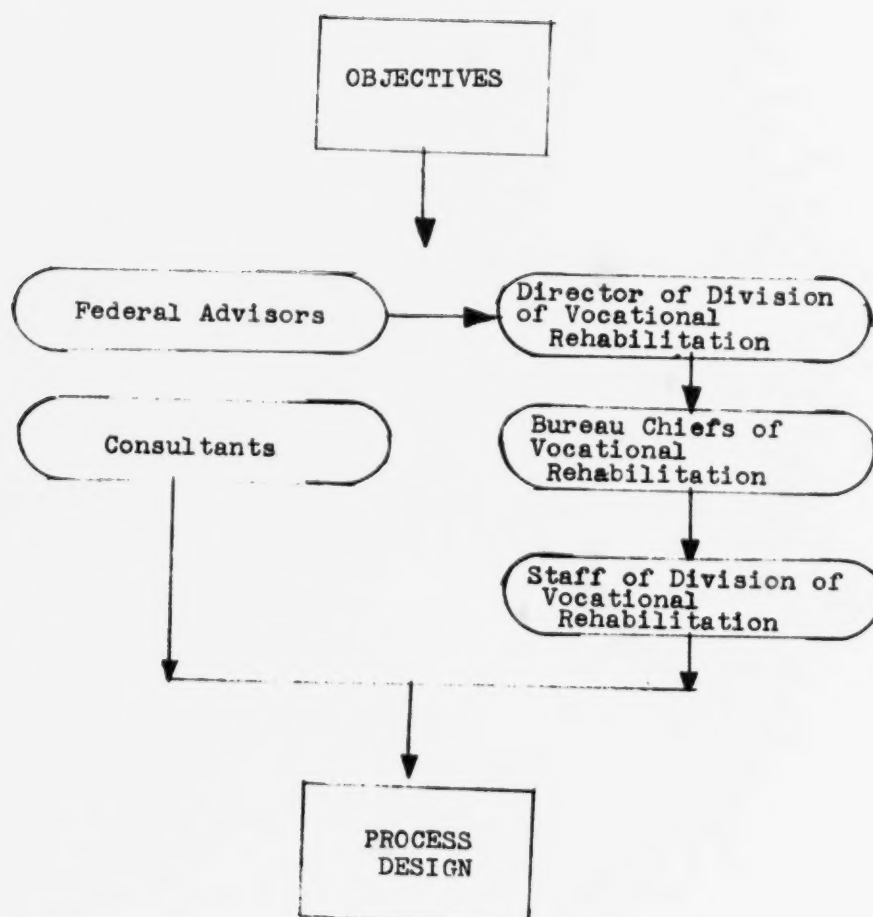
The basic objective of Vocational Rehabilitation is to enable "eligible" clients to engage in a "gainful occupation". "Gainful occupation" is defined in the Federal Register, Volume 31, No. 9 January 4, 1966 as:

"Gainful occupation" includes employment in the competitive labor market; practice of a profession; self employment; homemaking; farm or family work (including work for which payment is in kind rather than in cash); sheltered employment; and home industries or other gainful homebound work.

In addition to a "gainful occupation" for a rehabilitation client, the objectives of the rehabilitation process include improvement of the client's:

1. Physical Adaptation
2. Personal Adjustment
3. Educational Development
4. Economic Condition
5. Communication Skills

The Design of the Process, Figure V, shown on the following page, is a joint undertaking of the Director of the Division, Bureau Chiefs, Staff of the Division of Vocational Rehabilitation, Consultants, and Federal Advisers. The Design of the Process should be continually reexamined in the light of statistical information furnished by the Statistical Program.



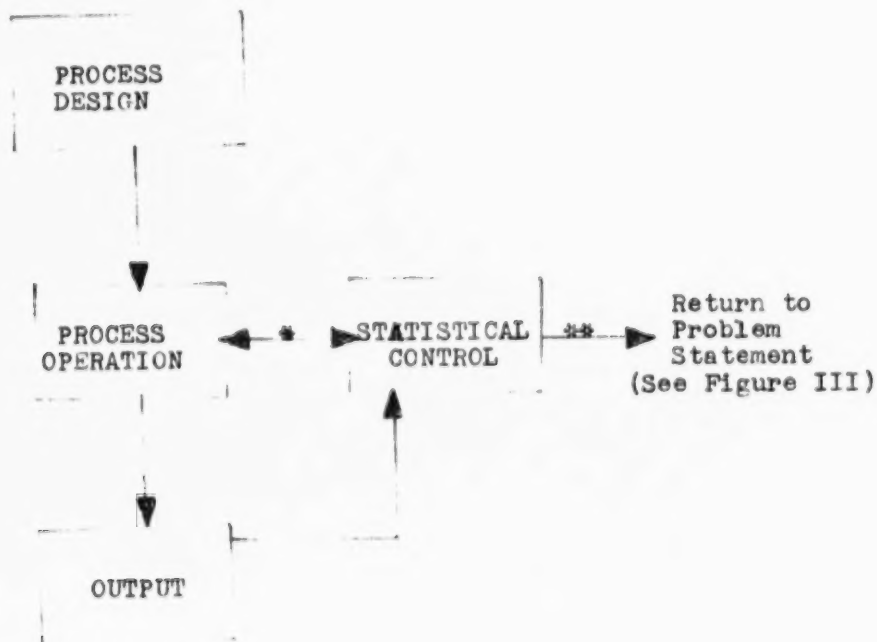
DESIGN OF THE PROCESS.

FIGURE V

The Process Design yields a Process Operation whose primary task is to rehabilitate clients within the guidelines and restrictions established by the Process Design. This task includes the;

1. Allocation and use of facilities and materials
2. Utilization of professional and clerical personnel
3. Expenditure of budgeted funds on facilities material, and personnel
4. Planning of programs in order to achieve the predetermined objectives.

The Process Operation and its statistical controls are shown in Figure VI.



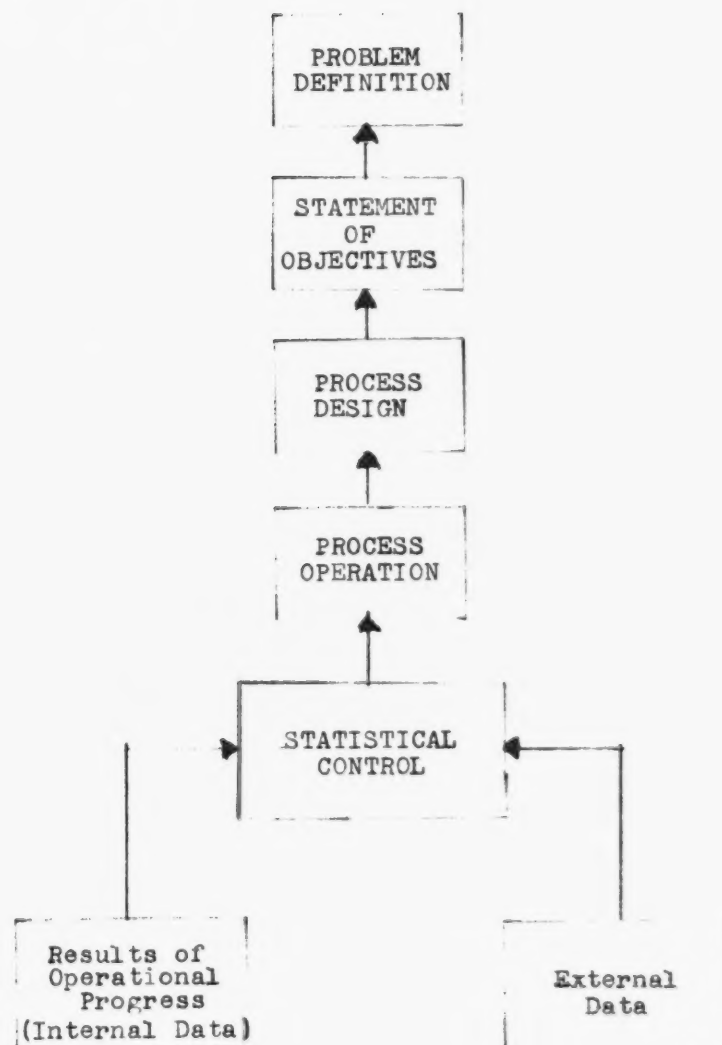
*Internal control of the Process
 **External evaluation of the Process

PROCESS OPERATION AND STATISTICAL CONTROL

FIGURE VI

The results of the Process Operation are used for the internal control of the rehabilitation process and are also used to check the overall effectiveness of the vocational rehabilitation process. The primary source and largest user of statistics will be the Process Operation. Statistical data from the Process Operation will reveal the extent to which clients have been placed in gainful occupations, or the extent to which their social and economic status has been improved. Thus, in essence, the Process Operation provides statistical data which can be used to check the effectiveness of the Process.

The statistical function then concerns itself with the collection, summary, and distribution of internal and external statistics for control purposes. Figure VII, on the following page, illustrates the Statistical Program as a control device which provides internal and external statistical data which is used to improve the Process Operation, The Process Design, the Statement of the Objectives and the Problem Definition.



THE STATISTICAL CONTROL FUNCTION

FIGURE VII

USERS, SOURCES, AND FORMATS OF SUGGESTED STATISTICAL REPORTS

An effective Statistical Program can and must provide statistical intelligence to meet the needs of the:

1. Problem Definition
2. Establishment of Objectives
3. Process Design
4. Process operation.

Each of these groups or elements has particular statistical requirements which may be met by the use of status reports, flow-type reports, exception reports, or a combination of these. A status-type report provides data at a specific point in time. For example, the Case Load at the end of a fiscal year is an example of a status report. A flow report provides information on movement or action during a given period, such as, the number of clients rehabilitated in a period of a month, quarter, or year. An exception report signals those situations which are out of the ordinary. It can be used to show, for example, cases which have been in service for an unwarranted period of time.

Statistical Requirements for Problem Definition

The specific data required for Problem Definition is an accurate appraisal or assessment of the incidence of various disabilities within the state. Most of the statistical data required by this element is found in the environment external to the vocational rehabilitation process. Two recent publications which recently surveyed the incidence of disability on a national scale are:

1. Health Statistics from the U. S. National Health Survey - Selected Impairments by Etiology and Activity Limitation, U. S. Department of Health, Education and Welfare - Public Health Service Publication No. 584-B35,
2. Vital and Health Statistics Data from the U. S. National Health Survey - Chronic Conditions and Activity Limitations, U. S. Department of Health, Education and Welfare - Public Health Service Publication No. 1000, Series 10, No.17.

These two publications together with data gathered from other state agencies and from private rehabilitation agencies can be used to assess the incidence of various disabilities within a particular state.

These disability data reveal at a particular point in time, the total number of all disabled persons. A further breakdown of those who could benefit from and who are eligible for vocational rehabilitation services then becomes necessary. The eligibility criteria are found in the state legislation which establishes these programs and the Federal legislation which provides basic guidelines for the vocational rehabilitation programs.

The current eligibility criteria for vocational rehabilitation services are summarized in the Federal Register, Vol. No. 9, January 14, 1966:

"Eligible" or "eligibility," means that (1) the handicapped individual has a physical or mental disability which constitutes a substantial handicap to employment and (2) vocational rehabilitation services may reasonably be expected to render him fit to engage in a gainful occupation.

"Handicapped individual" means any individual who has a physical or mental disability which constitutes a substantial handicap to employment, but which is of such a nature that vocational rehabilitation services may reasonably be expected to render him fit to engage in a gainful occupation, including a gainful occupation which is more consistent with his capacities and abilities.

"Handicapped individual" also means any individual who has a physical or mental disability which constitutes a substantial handicap to employment for whom vocational rehabilitation services are necessary for purposes of the determination of rehabilitation potential.

"Substantial handicap to employment" means that a physical or mental disability (in the light of attendant medical, psychological, vocational, educational, cultural, social, or environmental factors) impedes an individual's occupational performance, by preventing his obtaining, retaining, or preparing for a gainful occupation consistent with his capacities and abilities.

"Physical or mental disability" means a physical or mental condition which materially limits, contributes to limiting or, if not corrected, will probably result in limiting an individual's activities or functioning. It includes behavioral disorders characterized by deviant social behavior or impaired ability to carry out normal relationships with family and community which may result from vocational, educational, cultural, social, environmental, or other factors.

These criteria for eligibility are the basis for a more precise definition of the rehabilitation problems which a state agency will be required to handle.

A recent study, An Administrative Study, Division of the Vocational Rehabilitation, Connecticut State Department of Education, made by Harbridge House, Inc. of Boston, Massachusetts summarized the incidence of various classes of disabilities in the State of Connecticut. The study also extrapolated the number of persons, by class of disability, who would be eligible for case services at a particular point in time as well as the gross annual increments to this number.

The age range for 16 to 64 was used in that study to indicate cases both eligible and likely to be feasible. The lower limit, 16, is the legal age limit for work in Connecticut and, in Connecticut, cases below 16 years of age are not eligible for vocational rehabilitation services. The upper age limit of 64 was chosen because most persons over 65 are eligible for Social Security benefits, and in addition many organizations require retirement at age 65. The upper age limit of 64 is used here only in making assessments of the incidence of disability, and it is not intended or suggested that persons over 65 be excluded from a vocational rehabilitation program.

Table 1, which follows, a Summary of the Eligible Rehabilitation Cases in the State of Connecticut in 1965 shows a total of 295,779 disabled persons in the State. Of this total however, only 56,617 are eligible for vocational rehabilitation. The data further indicates that annually an additional 5,822 persons become eligible for vocational rehabilitation services.

TABLE 1
SUMMARY OF
ELIGIBLE REHABILITATION CASES

Connecticut 1965

VRA Class of Disability	Estimated Total Incidence	Rate per 100,000	Estimated Incidence Eligible Cases	Rate per 100,000	Estimated Gross Annual Increment
Orthopedic	57,160	2,160	20,900	790	2,090
Visual	14,850	560	1,835	69	183
Hearing	9,620	360	3,190	120	319
Tuberculosis (and other respiratory diseases)	18,500	690	3,700	140	370
Mental Retardation	79,960	3,000	17,700	660	1,020
Mental Illness	33,589	1,260	4,092	150	1,170
Epilepsy	22,100	830	2,200	83	50
Cardiac	60,000	2,300	3,300	112	300
All Other					320
TOTAL	295,779		56,617		5,822

Source: An Administrative Study - Division of the Vocational Rehabilitation, Connecticut State Department of Education, (Harbridge House, Inc., Boston Massachussets 1966) p. 10.

Assessments of the incidence of disability, such as those shown in Table 1, should be supplemented by further detailed study. In Connecticut the Statewide Planning Project for Rehabilitation Services has among its goals the determination of the number of potential clients for vocational rehabilitation services. In addition, the Planning Project will also assess the severity of the disabilities and the extent to which existing facilities and services are able to meet the needs of vocational rehabilitation. After these statistics have been gathered it is the responsibility of the statistical program to keep these statistics current. For example, in the U. S. Census of 1970 there will be questions on disability. As soon as these data on disability incidence are available they should be compared with the existing data in order to judge the reliability of the Problem Definition. The Census data can be used to check the validity of the original assessments of total incidence, as well as validity of the estimates of the annual increment to the eligible Case Load.

The Problem Definition will also benefit from statistical information which is generated internally. As an example of data which can be gathered internally, a random sample of two hundred active cases were taken from the Connecticut Case Load. The personal data of the clients in this group are presented in Report No. 1: Case Load - Personal Data. A report of this nature can be used to show the composition of the Case Load in a particular state; it can also be used for comparison with Case Loads in other states. The data in this report can further be used as the basis for estimating the costs of case services for particular disability categories. A suggested method for doing this is explained in Chapter IV of this report.

Report No. 1: Case Load - Personal Data reflects status information since it is prepared at a fixed point in time. Its flow counterpart would be a report of rehabilitated clients during a certain time period. It, then, becomes possible to compare flow data with status data to determine or forecast rehabilitation in a future period. The Case Load report can show exception-type information by selecting only certain disabilities or certain age groups for a particular study. In the format presented in all cases, only those disabilities which account for significant portions of the Case Load should be shown.

The Statistical Program services the needs of the Problem Definition by providing both external data on disability incidence and internal data on Case Load composition. These data are essential to the establishment of a more precise Problem Definition which, in turn, affects the Establishment of the Objectives, the Process Design, and the Process Operation.

REPORT NO. 1: CASE LOAD - PERSONAL DATA

MAJOR DISABILITY (V.R.A. Codes)	N U M B E R	AGE					SEX		RACE	
		15 19	20 34	35 44	45 64	65+	M	F	W	N
Aural	7		3	2	2		5	2	7	
Orthopedic exc. Amputations	35	6	8	6	14	1	24	11	32	3
Absence or Amputations	5	1	1	1	2		2	3	4	1
Psychotic Disorders	15		5	6	4		9	6	14	1
Psychoneurotic Disorders	25	5	13	2	5		11	14	20	5
Other Mental Disorders	52	32	14	2	4		29	23	37	15
Mental Retardation	33	25	7		1		19	14	21	12
Nervous System	1		1				1			1
Heart and Circulatory	12	1	1	5	5		8	4	10	2
Respiratory	4	1		2	1		1	3	3	1
All Others	11	6	3	1	1		8	3	11	
<u>Total</u>	200	77	56	27	39	1	117	83	159	41
<u>Percentage</u>	100%	28.5	28	13.5	19.5	.5	58.5	41.5	79.5	20.5

* Represents 200 Clients chosen at random from the Connecticut Case Load for fiscal year 1967.

MARITAL STATUS				DEPENDENTS				EDUCATION						
M	W	S-D	NM	0	1	2-3	4+	7	8	9-11	12	13-15	16	XX
4		1	2	3	1	2	1		1	3	3			
18	1	2	14	23	3	5	4	3	6	12	10	2	2	
3	1		1	2		2	1	1		1	2	1		
6		1	8	11	1	2	1	2	2	6	2	1	2	
7		5	13	15	3	5	2	1		11	9	3	1	
		12	40	49	1	2	0	1	7	31	9	4		
1			32	33					4	19				10
1				1							1			
8	1	1	2	5	2	4	1	2	2	4	3	1		
1		1	2	4				1		2				1
1	1		9	10			1	1	1	6	1		1	1
50	4	23	123	156	11	22	11	12	23	95	40	12	6	12
28	2	11.8	61.8	88	8.8	11	8.8	8	11.8	47.8	20	8	8	8

Statistical Requirements for Establishing Objectives

Those groups establishing objectives require statistical intelligence which evaluates the extent to which the desired objectives have been met. As noted earlier, the principal objectives of the vocational rehabilitation system are to enable a client to engage in a "gainful occupation" and improve his physical adaptation, personal adjustment, educational development, economic condition, and communication skills. The reports, listed below and illustrated in the following pages, represent one hundred rehabilitated clients (Status 26 - Closed Rehabilitated) chosen at random from closures in Connecticut in the October - December quarter, 1966. In each report the data are correlated with Major Disability. These data can be used to measure the achievement of the stated objectives of the vocational rehabilitation system.

1. Report No. 2: Classification by
Work Status and Occupational Codes
2. Report No. 3: Weekly Earnings at
Acceptance and Closure
3. Report No. 4: Sum of Benefits Received
4. Report No. 5: Social Security Dis-
ability Insurance Status
5. Report No. 6: Public Assistance at
Acceptance and Closure

Each of these reports should be correlated with Major Disability so that a comparison of experience can be made among various types of disability.

The reports cited above are primarily flow-type reports since they summarize clients' data after the rehabilitation process is complete. However, with the exception of Report No. 4: Sum of Benefits Received, they can become status reports by using as data the Case Load at a particular point. The reports may be of an exception type if the data are compiled only for cases which fall outside of prescribed limits. For example, those cases which show limited benefits as a result of the rehabilitation process could be further examined.

Examples of and explanatory notes for Reports: 2,3,4,5 and 6 are shown on the following pages.

Notes for Report No. 2:

** WORK STATUS CLASSIFICATIONS

<u>Code</u>	<u>Work Status</u>
1	Wage or salaried worker (competitive labor market)
2	Wage or salaried worker (sheltered workshop)
3	Self-employed (except BEP)
4	State agency-managed business enterprise (BEP)
5	Homemaker
6	Unpaid family worker
7	Not working-student
8	Not working-other

*** OCCUPATIONAL CLASSIFICATIONS

Dictionary of Occupational Titles, Volume I
U. S. Government Printing Office;
Washington, D. C.; 3rd Edition, 1965

<u>Code</u>	<u>Title</u>
00-14	Professional and technical
15-19	Managerial, Officials, Administrators, Executives
20-29	Clerical and Sales
30-38	Service trades
40-46	Farm, fish, forest workers
50-59	Processing industries
60-69	Machine trades
70-79	Bench workers
80-89	Structural employees
90-97	Miscellaneous (NEC)

REPORT NO. 2: CLASSIFICATION BY WORK STATUS AND OCCUPATIONAL CODES

MAJOR DISABILITY (V.R.A. Codes)	#N U M B E R	** WORK STATUS (AT ACCEPTANCE) CLASSIFICATION							
		1	2	3	4	5	6	7	8
Aural	7	4						1	2
Orthopedic exc. Amputations	22	2				1		5	14
Absence or Amputations	5	2							3
Psychotic Disorders	3								3
Psychoneurotic Disorders	6	1	1						4
Other Mental Disorders	24							14	10
Mental Retardation	19	1	2					10	6
Heart and Circulatory	7	2						1	4
Respiratory	3			1					2
All Others	4							1	3
<u>Total</u>	100	12	3	1		1		32	51
<u>Percentage</u>	100%	12	3	1		1		32	51

* Represents 100 Clients (Status 26 Closed Rehabilitated)
chosen at random from closures in October - December 1966.

** WORK STATUS (AT CLOSURE) CLASSIFICATION								*** OCCUPATIONAL (AT CLOSURE) CLASSIFICATION											
1	2	3	4	5	6	7	8	00 14	15 19	20 29	30 39	40 49	50 59	60 69	70 79	80 89	90 99		
7								1		1				1		1	3		
20	1			1				2	1	7	1		3	2	2	3	1		
5								1		1				1	1		1		
3											1						2		
6										2			1	1	1		1		
23				1					1	3	2		4	7	2	1	4		
19										2	4		2	1	2	2	6		
7								1	1	1	2			1			1		
3											1		1				1		
4										1	1				1		1		
97	1			2				5	3	18	12		11	14	9	7	21		
97	1			2				5	3	18	12		11	14	9	7	21		

** See following page for Notes.
*** See following page for Notes.

REPORT NO. 3: WEEKLY EARNINGS AT ACCEPTANCE AND CLOSURE

MAJOR DISABILITY (V.R.A. Codes)	No.	AT ACCEPTANCE (by dollar category)							AT CLOSURE (by dollar category)						
		0	1 19	20 39	40 59	60 79	80 99	+	0	1 19	20 39	40 59	60 79	80 99	+
Aural	7	3			1	3						1	3	2	1
Orthopedic exc. Amputations	22	20			1			1	1	1	2	6	7	2	3
Absence or Amputations	5	3			1			1					2	1	2
Psychotic Disorders	3	3										1	1	1	
Psychoneurotic Disorders	6	4	1			1						1	1	1	3
Other Mental Disorders	24	23		1					1			2	8	9	4
Mental Retardation	19	15	2	1	1							5	10	4	
Heart and Circulatory	7	5			1			1				1	2	1	3
Respiratory	3	2			1							1	1	1	
All Others	4	4											4		
<u>Total</u>	100	82	3	2	6	4		3	2	1	2	18	39	22	16
<u>Percentage</u>	100%	82	3	2	6	4		3	2	1	2	18	39	22	16

* Represents 100 Clients (Status 26 - Closed Rehabilitated)
chosen at random from closures in October, December, 1966.

REPORT NO. 4: SUM OF BENEFITS RECEIVED

MAJOR DISABILITY (V.R.&. Codes)	* N U M B E R	** SUM OF BENEFITS											
		0	10	20	30	40	50	60	70	1 0 0	1 1 0	1 2 0	1 3 0
Aural	7									1	1	2	1
Orthopedic exc. Amputations	22			2	1					6	2	4	3
Absence or Amputations	5				2						1	1	
Psychotic Disorders	3									2		1	
Psychoneurotic Disorders	6									1		3	1
Other Mental Disorders	24			2						6		3	
Mental Retardation	19									4	1	5	1
Heart and Circulatory	7									1		2	2
Respiratory	3									1			1
All Other	4									2	1	1	
<u>Total</u>	100			4	3					24	6	22	9
<u>Percentage</u>	100%			4	3					24	6	22	9

* Represents 100 Clients (Status 26 - Closed Rehabilitated)
chosen at random from closures in October - December, 1966.

** SUM OF BENEFITS																			
1 4 0	1 5 0	1 6 0	1 7 0	2 0 0	2 1 0	2 2 0	2 3 0	2 4 0	2 5 0	2 6 0	2 7 0	3 0 0	3 1 0	3 2 0	3 3 0	3 4 0	3 5 0	3 6 0	3 7 0
						1												1	
2		2																	
																	1		
		1																	
1		11													1				
		8																	
		1																	1
														1					
3		23				1								1	1		1	1	1
3		23				1								1	1		1	1	1

** See following page for notes.

Notes for Report No. 4

SUM OF BENEFITS CODES

<u>Code</u>	<u>Meaning</u>
0	<u>No measurable benefits</u>
10	<u>Physical Adaptation has been</u> <u>measurably improved</u>
20	<u>Personal Adjustment has been</u> <u>demonstrably improved and</u> <u>documented</u>
40	<u>Educational Development shows</u> <u>measurable improvement and</u> <u>is documented</u>
100	<u>Economic Improvement has occurred</u> <u>in earnings or dependence on</u> <u>public or private funds has de-</u> <u>creased</u>
200	<u>Communication Skills have been</u> <u>demonstrably improved</u>

Examples

1. An individual who has a Sum of Benefits equal to 70 has shown improvement in Physical Adaptation, Personal Adjustment, and Educational Development.
2. An individual who has a Sum of Benefits equal to 110 has shown Economic and Personal Adjustment Improvement.

REPORT NO. 5: SOCIAL SECURITY DISABILITY INSURANCE STATUS

MAJOR DISABILITY (V.P.A. Codes)	# NO.	AT REFERRAL (by type)**				AT CLOSURE (by type)**			
		0	1	2	3	0	1	2	3
Aural	7	6	1			6	1		
Orthopedic exc. Amputations	22	20		2		19	1	2	
Absence or Amputations	5	5				5			
Psychotic Disorders	3	2		1		2		1	
Psychoneurotic Disorders	6	3	1	2		4	1	1	
Other Mental Disorders	24	23		1		23		1	
Mental Retardation	19	18	1			18	1		
Heart and Circulatory	7	6	1			6	1		
Respiratory	3	2		1		2		1	
All Other	4	4				4			
<u>Total</u>	100	89	4	7		89	5	6	
<u>Percentage</u>	100%	89	4	7		89	5	6	

* Represents 100 Clients (Status 26 - Closed Rehabilitated) chosen at random from Closures in October-December 1966.

** 0 - Not an Applicant; 2 - Applicant Denied
1 - Applicant Allowed 3 - Application pending or unknown.

Notes for Report No. 6:

<u>Code</u>	<u>Types of Public Assistance</u>
0	None
1	Old Age Assistance (OAA)
2	Aid to the Blind (AB)
3	Aid to Permanently and Totally Disabled (APTD)
4	Aid to Families with Dependent Children only (AFDC)
5	General Assistance only
6	AFDC in combination with others
7	Any other combination of above types of assistance
8	Not Known

REPORT NO. 6: PUBLIC ASSISTANCE AT ACCEPTANCE AND CLOSURE

MAJOR DISABILITY (V.R.A. Codes)	*NO.	PUBLIC ASSISTANCE AT ACCEPTANCE (by type)**							
		None	1	2	3	4	5	6	7
Aural	7	6					1		
Orthopedic exc. Amputations	22	18				2	2		
Absence or Amputations	5	5							
Psychotic Disorders	3	3							
Psychoneurotic Disorders	6	6							
Other Mental Disorders	24	23					1		
Mental Retardation	19	18				1			
Heart and Circulatory	7	5				1	1		
Respiratory	3	3							
All Others	4	4							
<u>Total</u>	100	91				4	5		
<u>Percentage</u>	100%	91				4	5		

* Represents 100 Clients (Status 26-Closed Rehabilitated)
chosen at random from closures in October-December, 1966.

PUBLIC ASSISTANCE AT CLOSURE (by type)**									
a	None	1	2	3	4	5	6	7	8
	7								
	20				1	1			
	5								
	3								
	6								
	24								
	19								
	6					1			
	3								
	4								
	97				1	2			
	97				1	2			

** See following page for Notes.

The data contained in the preceding reports will be of use to the groups formulating the objectives even though each group has its own particular interest and each group can be best served by particular means. For example, the general public is best served by periodic reports, in the form of press releases, which tell of the operations of the vocational rehabilitation process and the results achieved. For the general public, masses of statistical data are usually considered dull and uninteresting while press releases highlighting individual personal vocational rehabilitation experiences in particular parts of the state are extremely useful.

The needs of the private rehabilitation agencies, which are an important source of referrals to the vocational rehabilitation process, can be met by providing them with comprehensive reports on the disabilities with which they are most concerned. Because of the data which are now available on various categories of disabilities it should be possible to present special reports in the areas of Mental Health, Mental Retardation, or Heart and Circulatory disease. The statistical needs of state agencies, such as, Welfare and Employment can be met by providing them with summaries of the outcome of the rehabilitation process for clients whom they have referred.

At a higher level the success of the realization of the Objectives of the vocational rehabilitation process must be presented to the Legislature and the Governor. While these groups or individuals have a humanitarian interest in individual cases, as well as the total number of cases, their interest is also of an economic nature. It is suggested that for this reporting, the Statistical Program should use the techniques of Cost Benefit Analysis. Cost Benefit Analysis "is the measurement of the total benefits of a program in dollar terms against the cost of that program".⁶ In a recent study it was shown that "rehabilitated persons--returned to the state in one year more than \$1.67 for each dollar the state invested on the entire program in the same year".⁸ The calculation of the "return" was based on savings which the state obtained through decreases in: 1) funds paid for public assistance; and 2) funds for support of persons in public institutions. In addition, rehabilitated clients, who increased their earnings, also increased the amount of sales tax revenue in the state. This type of statistical reporting calls attention to the important economic justification for the vocational rehabilitation program.

The Statistical Program must meet the statistical needs of the Federal Office of Vocational Rehabilitation by submitting detailed reports on an established reporting basis. These reports, which will not be examined here, are useful to all groups within the vocational rehabilitation agency.

Statistical Requirements for - Process Design

The Designers of the process must receive from the Statistical Program data covering the number and characteristics of clients in the Case Load and the Referral Sources of these clients. These data which represent the current input to the operation of the rehabilitation process determine the needs for:

1. Budget
2. Personnel
3. Facilities

Data on the Case Load can be obtained from Report No. 1: Case Load-Personal Data which indicates the composition of the Case Load at a particular point in time. Data on Referral Sources is found in Report No. 7: Case Load Distribution by Referral Sources. In both Report No. 1 and No. 7, two hundred cases were chosen at random from the Connecticut Case Load to illustrate the content and suggested formats of these reports.

Report No. 7 is illustrated on the following page.

REPORT NO. 7: CASE LOAD DISTRIBUTION BY REFERRAL SOURCE

MAJOR DISABILITY (V.R.A. Codes)	#NO.	REFERRAL SOURCES (types)**											
		00	01	02	03	04	05	07	08	09	10	11	12
Aural	7			3					1	2		1	
Orthopedic exc. Amputations	35	5	5	8	1	1	3	5		2	1	1	
Absence or Amputations	5	1	2	1					1				
Psychotic Disorders	15		14				1						
Psychoneurotic Disorders	25	2	10	2	8		1	2					
Other Mental Disorders	52	25	17	1	2		1	1			1	2	2
Mental Retardation	33	18		8	1		4			1	1		
Nervous System	1		1										
Heart and Circulatory	12		7			1	1	1				2	
Respiratory	4		3					1					
All Other	11	4	2	1	1			1		2			
<u>Total</u>	200	55	61	24	13	2	11	11	2	7	6	6	2
<u>Percentage</u>	100%	27.5	30.5	12	6.5	1	5.5	5.5	1	3.5	3	3	1

*Represents 200 Clients chosen at random from
the Connecticut Case Load for fiscal year 1967.

** See following page

Notes for Report No. 7:

**REFERRAL SOURCES

- 00 Educational Institutions
- 01 Hospitals and Sanitoriums
- 02 Other Health Agencies
- 03 Physicians
- 04 Social Security Administration
- 05 Workmen's Compensation Agencies
- 06 Welfare Agencies
- 07 State Employment Service
- 08 Artificial Appliance Company
- 09 Individual (except client)
- 10 Self-referred persons
- 11 Other Sources
- 12 Correctional Institutions

In order to determine budget needs the Process Designers must have data on the past cost experience of the vocational rehabilitation process. This historical cost data is essential and can be used as a preliminary step to project future needs. For example, Figure VIII, illustrates the yearly total expenditures for the Connecticut Case Load for the period 1963-1966.

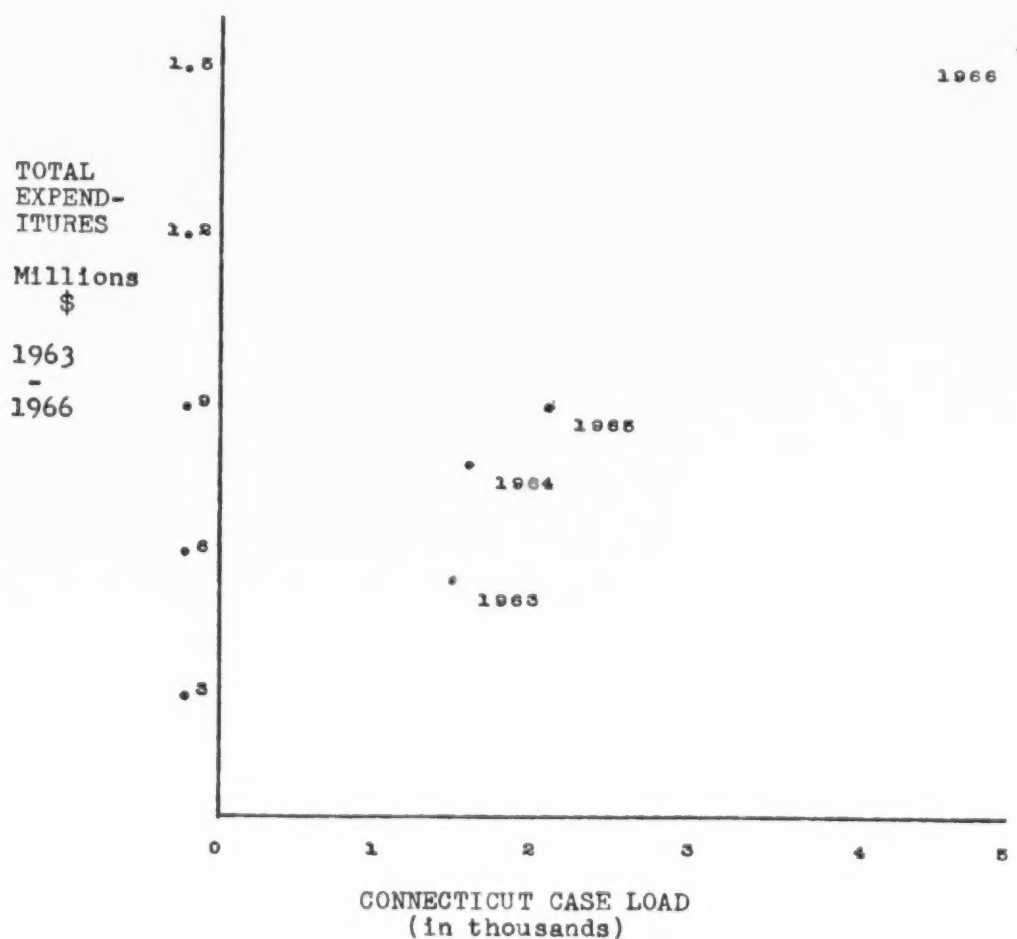


FIGURE VIII

Measures of simple linear correlation can be used to forecast the total expenditure required for a Case Load of a given size in a future period. An example of simple linear correlation applied to expenditures in Connecticut indicates that a projected Case Load of 10,000 would require total expenditures of approximately \$2,471,000. However, the projection of costs on the basis of the number in the Case Load is not sufficient, especially if the composition and nature of the disability categories in the Case Load change. Consequently, accurate, historical cost data by disability become of critical importance. A technique to calculate costs based on correlating disability with other pertinent characteristics of clients in the Case Load is suggested in Chapter IV.

The techniques of simple linear correlation can also be applied to forecast expenditures on:

1. Case Services
2. Rehabilitation Facilities
3. Workshops
4. Personnel
 - a. Professional
 - b. Clerical

It is the responsibility of the Process Designers to design a rehabilitation process which maximizes the utilization of both the Clerical and Professional personnel. Figures IX and X, respectively, illustrate the growth in number of rehabilitation personnel in Connecticut for the period 1941 to 1944. The techniques of linear correlation can be used as a general tool to forecast future expansion of these personnel needs in relation to the Case Load. An explanation of simple linear correlation can be found in Business Statistics, Chapter XXII, by John R. Stockton, (See Bibliography).

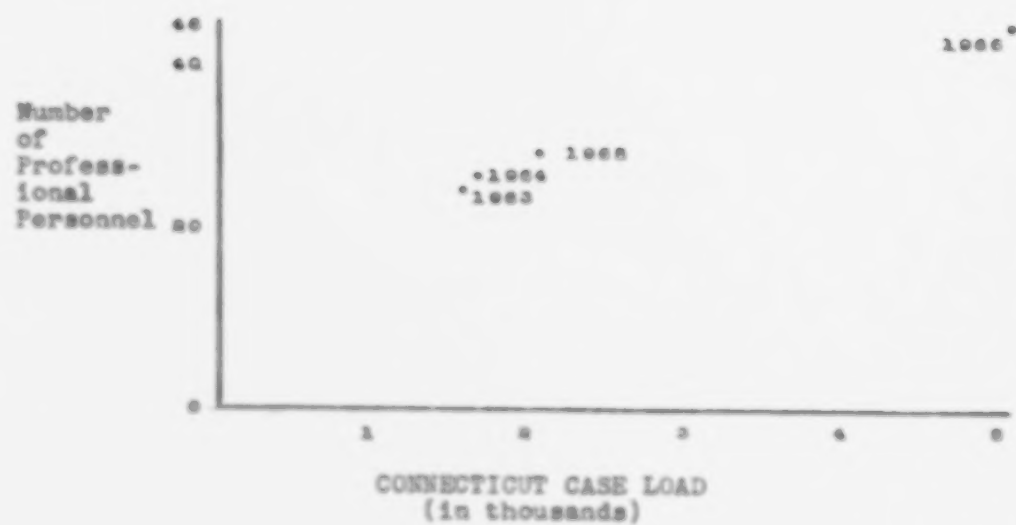


FIGURE IX

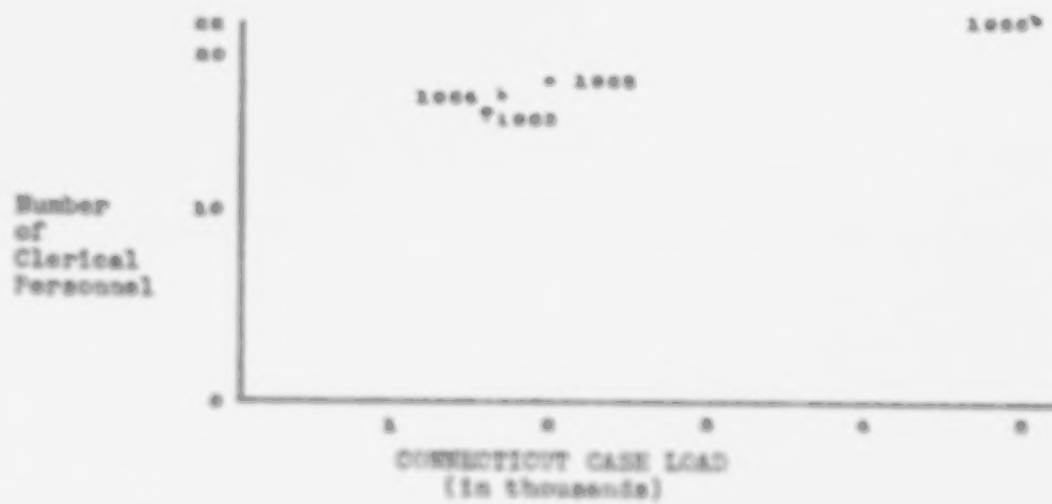


FIGURE X

The utilization of clerical personnel can be improved by designing a more efficient paper work flow within the organization and by studying the ratio of clerical personnel to professional personnel. The efficient utilization of professional personnel, primarily counselors, is a more difficult task because of the nature of their work. Establishing standards of performance for them is a critical responsibility of the Process Design because these standards will determine the number and kind of professional personnel needed.

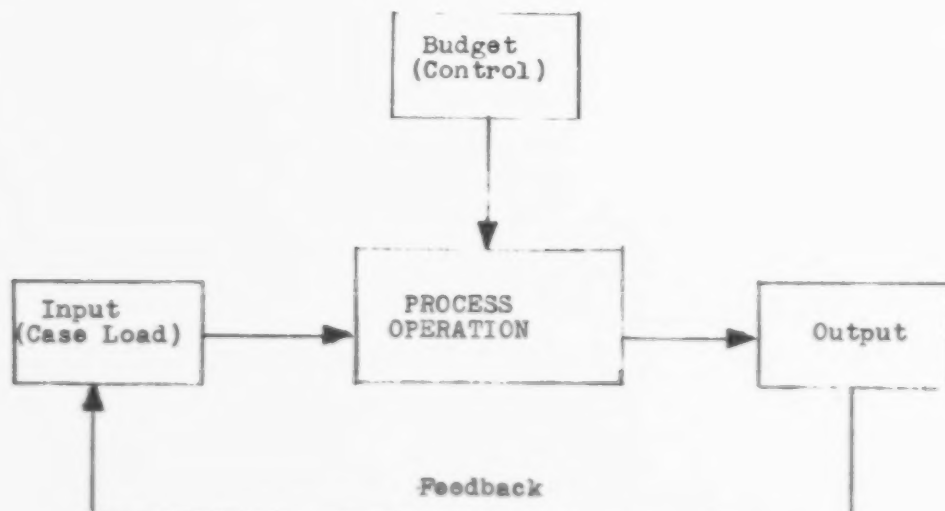
The Statistical Program must provide data which will enable the designers to establish equitable and realistic performance standards. The source of these standards should be a careful analysis of the time and costs associated with the rehabilitation of clients with particular disabilities. Although historical experience will again be heavily relied upon, this experience does not necessarily reflect the most efficient utilization of professional personnel. It must also be remembered that each counselor's Case Load is somewhat different than another counselor's Case Load. These differences may be both qualitative and quantitative in nature. Counselor performance is affected by the nature or the philosophy of vocational rehabilitation in a particular state. The term "people fixers" has been used to denote those vocational rehabilitation personnel or agencies which concern themselves almost exclusively with clients who require simple prosthetic devices in order to function. The number of "rehabilitated" clients in these instances, per counselor, tends to be high. In contrast, if the philosophy is to attempt rehabilitation of the mentally retarded or the emotionally disturbed, the number of rehabilitated clients will be less striking. The function of the Statistical Program is to furnish as much pertinent, comparable detail on the results attained by the Vocational Rehabilitation counselors in a particular state as well as comparable data on the results achieved in other states. Again the admonition must be repeated: performance standards for counselors based only on numbers of clients rehabilitated are simply not adequate.

The Statistical Program must also furnish to the Process Designers data on the nature and composition of Rehabilitation Centers, Workshops, and other rehabilitation facilities within the state. In conducting a survey of these facilities will be made by the Statewide Planning Project for Rehabilitation Services. After this survey has been made it will be the function of the Statistical Program to keep these statistics current. The Statistical Program can also then compare existing facilities with the geographic incidence of disabilities within the state in order to aid in the determination of the location of new rehabilitation facilities within the state.

It is difficult to separate the Process Design from the Process Operation which follows since these two elements are so closely related. However, the Process Design must receive consideration as a separate element; otherwise it may tend to reflect only the daily pressing problems rather than reflecting a careful synthesis of an optimum, long-range Process Design.

Statistical Requirements for Process Operation

The operation of the Vocational Rehabilitation Process which is the actual processing of a client by interviewing, medical diagnosis, counseling, and job placement represents the detailed workings of the process most frequently referred to as Vocational Rehabilitation. This operation is shown in Figure XI below.



VOCATIONAL REHABILITATION PROCESS

FIGURE XI

By examination of the needs of each of the steps shown in Figure XI some of the statistical reports or data which would be useful to the Process operation can be shown. The Case Load shown in Report No. 1: Case Load - Personal Data serves as the basis for the allocation of the budgets and personnel which will be used in the operation. In addition, the Process Operation requires data on the type and location of the various rehabilitation facilities within the state.

As noted earlier the efficient utilization of personnel relies very heavily on the precision with which the characteristics of the Case Load are known. The efficient utilization of personnel also depends on the optimum allocation of cases to each counselor so that a counselor is not overburdened with a particularly difficult type of disability case. If there are instances in which a counselor specializes, because of his training or background, in particular types of disabilities then it would be expected that his assigned case load and number of clients rehabilitated would not be directly comparable to those of a counselor who had a more varied case load. These factors indicate that an analysis should be made of each counselor's case load by the Statistical Program. Suggested reports to serve this purpose are:

1. Report No. 8: Case Load Distribution by Counselor and Major Disability
2. Report No. 9: Case Load Distribution by Counselor and Age Groups
3. Report No. 10: Case Load Distribution by Counselor and Clients' Status.

In Reports No. 8 and No. 9 data have been compiled for two hundred active cases in the Connecticut Case Load. In Report No. 10 hypothetical data have been taken in order to illustrate the proposed content and format of this report.

REPORT NO. 8: CASE LOAD DISTRIBUTION BY COUNSELOR

COUNSELOR NUMBER	* NUMBER	** MAJOR DISABILITY (V.R.A. Code)										
		200 229	300 399	400 449	500	510	520 522	530 534	630 638	640 648	650 659	All Other
213	14				6		8					
214	13						12					1
216	17		4				13					
218	11	2	1			4	3	1				
219	17		3	2		2	2	7				1
221	12		3			2	1	2		3		1
241	13	1	5		1	1	1			3		1
412	25	1	2	2	5	9	2		1		2	1
414	15		7							4	2	2
415	15	2	6			3		2		1		1
416	37	1	4	1		4	2	21		1		3
423	11				3		8					
<u>Total</u>	200	7	35	5	15	25	52	33	1	12	4	11
Percentage	100%	3.5	17.5	2.5	7.5	12.5	26	16.5	.5	6	2	5.5

* Represents 200 eligible cases at random from the Connecticut Case Load for fiscal year 1967.
 ** See following page.

Notes for Report No. 8:

MAJOR DISABILITY
**(V.R.A. Code)

200	
229	Aural
300	Orthopedic
399	except
	Amputations
400	Absence or
449	Amputations
500	Psychotic
	Disorders
510	Psychoneurotic
	Disorders
520	Other Mental
522	Disorders
530	Mental
534	Retardation
640	Heart and
649	Circulatory
650	Respiratory
659	
	All others

REPORT NO. 9:

CASE LOAD DISTRIBUTION BY COUNSELOR AND AGE GROUPS

Counselor Number	* N U M B E R	AGE GROUPS				
		16-19	20-34	35-44	45-64	65+
213	14	1	7	2	4	
214	13	13				
216	17	13	2		2	
218	11	4	4	1	2	
219	17	6	6	1	4	
221	12	3	3	1	5	
241	13		4	4	4	1
412	25	1	10	8	6	
414	15	3	4	6	2	
415	15	3	5	1	6	
416	37	30	6		1	
423	11		5	3	3	
Total	200	77	56	27	39	1
Percentage	100%	38.5	28	13.5	19.5	.5

* Represents 200 Clients chosen at random from the Connecticut Case Load for fiscal year 1967.

Report No. 10: Case Load by Counselor and Clients' Status, which is shown on the following pages, would be useful to study the following:

1. Case Load by Counselor
2. Case Load by Age of Cases
3. Typical Status Movements
4. Case Load by Districts
 within the State
5. Case Movements by Disability.

In Connecticut a Case Number which facilitates this analysis has been devised. The Case Number contains the following digits:

<u>Digits</u>	<u>Contents</u>
1	District within Connecticut
2-3	Counselor number within District
4-7	Month and year of Referral
8-10	Case number within fiscal year

Thus, Case Number 216 0567 030 indicates:

<u>Digits</u>	<u>Contents</u>
1	District 2 in Connecticut
2-3	Counselor No. 16 in District 2
4-7	Case is dated May 1967
8-10	This is the 30th case in the fiscal year July 1966-June 30, 1967 for Counselor No. 16.

It is possible then to analyze the Case Load in considerable detail particularly if the data on status movement is recorded on punched cards or magnetic tape.

REPORT NO. 10: CASE LOAD DISTRIBUTION BY COUNSELOR
AND CLIENT'S STATUS

CASE NUMBER	M A J. D I S.	Referral		Ext. Eval.		In Service		
		00	02	04	06	10	12	14
216 0567 030		0567						
216 0567 031		0667						
216 0467 028		0467	0567					
216 0467 029		0467	0567					
216 0467 023	200	0467	0567	0667				
216 0467 024	640	0467	0567	0667				
216 0467 025	510	0467	0567					
216 0367 018	400	0367	0367			0667		
216 0367 019	534	0367	0367			0667		
216 0267 016	300	0267	0267			0267		
216 0167 015	660	0167	0167			0167		0267
216 1166 013	500	1166	1266			0167		0267
216 0966 011	630	0966	1066			1066		
216 0766 001	690	0766	0866			0966		

In Service					Closures			
16	18	20	22	24	08	26	28	30
					0567			
	0367		0367					
0367	0467			0567				
	0367	0467	0567			0667		
1166	1266	0167	0567			0667		
							0167	

A cost system which gives an immediate answer on the Case Service Cost for rehabilitating a particular client should also be established. These costs may be tied in to a fiscal accounting function, but it should be the responsibility of the Statistical Program to establish a system which at any point in time shows the amount of money spent for Case Services on a particular client. It is not suggested that this information be used to curtail services for cases which justify the expenditures, but consideration must be given to the fact that expenditures on a particular client mean that another client may be deprived of assistance. Accordingly, the Statistical Program should devise techniques which can be used to estimate service costs. A suggested technique for determining Case Service Costs is given in Chapter IV. These estimated costs then become the basis for an expenditure commitment for a particular client. As funds are expended against this commitment or plan, the remaining balance should be brought forward. Thus, when the balance on hand approaches zero, the counselor can judge whether to allocate additional funds. Equally as important, when funds are committed but not used, they are being withheld for other worthy purposes. The cost system should provide ways of releasing these unused funds as needed.

A system for controlling Case Service expenditures as they occur will go into effect in Connecticut on July 1, 1967. Under this system expenditures for client's Case Services are classified by:

1. Type of Facility Used
2. Type of Service Rendered
3. Status of client when Service Received.

Table 2, on the following page, illustrates the use of the coding sequence.

TABLE 2

COSTS - CASE SERVICES

Rehabilitation Center		Workshop		Other		
1.*						
101		201		301		Completed Referrals Diagnostic Services
2.**						
6 mo.	18 mo.	6 mo.	18 mo.	6 mo.	18 mo.	Completed Evaluation Process
162	182	262	282	362	382	Diagnostic Procedures
163	183	263	283	363	383	Physical Restoration
164	184	264	284	364	384	Training & Materials
165	185	265	285	365	385	Maint. & Transport.
166	186	266	286	366	386	Training Allowances
167	187	267	287	367	387	Other Services
3.***						
						Completed Case Services
109		209		309		Diagnostic Procedures
110		210		310		Physical Restoration
111		211		311		Training & Materials
112		212		312		Maint. & Transport.
113		213		313		Training Allowances
114		214		314		Other Services

* Code indicates Type of Facility and Service (Covers Referral statuses, 00 and 02.)

** First digit indicates Type of Facility, second digit length of Extended Evaluation, third digit Type of Service (Covers Extended Evaluation Statuses, 04 and 06.)

*** First digit indicates Type of Facility, balance are Type of Service. (Covers In-Service Statuses, 10-24)

Summary

Chapter III suggests a set of statistical reports which would be useful sources of information in the Vocational Rehabilitation System. The reports are primarily summarizations of internal data which are presented in tabular form. These reports can, in some instances, be presented in graphic form also. The primary source of these data are IBM punched cards which contain the data originally recorded by the Rehabilitation Counselor on Form R-300: Case Service Report; State Federal Program of Vocational Rehabilitation. The suggested reports are shown to be of primary consideration to specific elements of the Vocational Rehabilitation System. These elements are the Problem Definition, the Establishment of Objectives, the Process Design, and the Process Operation. It is understood, of course, that a hard or precise boundary would be difficult to draw between each of the elements. Therefore a particular report or particular statistical information may be of primary concern to one element and of general interest to other elements.

The various reports shown should be produced on a scheduled basis or on an "as required" basis depending on their usage. A report such as Report No. 1: Case Load - Personal Data could be prepared quarterly or less frequently, if desired, because of the status nature of the data which it contains. On the other hand, Report No. 10: Case Load Distribution by Counselor and Clients' Status should be produced monthly because it can be used to measure the movement of clients through the vocational rehabilitation process.

Table 3, Summary of Recommended Statistical Reports, is a listing of these reports indicating the principal use of the reports and the time period of preparation. Table 3, or one similar to it, can be used by the Statistical Program to list and identify all statistical reports and their frequency of preparation. Such a table will provide an overall view of the data gathering activities within the organization and provides the basis for scheduling these activities within the requisite time periods.

TABLE 3

SUMMARY OF RECOMMENDED STATISTICAL REPORTS

<u>Statistical Report</u>	System Element			
	Problem Defini- tion	Objec- tives	Process Design	Process Opera- tion
1: Case Load - Personal Data	X			
2: Classification by Work Status and Occupational Codes		X		
3: Weekly Earnings at Accept- ance and Closure		X		
4: Sum of Benefits Received		X		
5: Social Security Disability Insurance		X		
6: Public Assistance at Accept- ance and Closure		X		
7: Case Load Distribution, by Referral Source			X	
8: Case Load Distribution by Counselor				X
9: Case Load Distribution by Counselor and Age Groups				X
10: Case Load Distribution by Counselor and Clients' Status				X

Frequency of Preparation			Type of Reporting		
Monthly	Quarterly	Annually or as Required	Flow	Status	Excep- tion
	X			X	
	X		X		
	X		X		
	X		X		
	X		X		
	X		X		
		X		X	
X			X		
		X			X
X			X		

RECOMMENDATIONS AND CONCLUSION

The Place of the Statistical Program in the Connecticut Division of Vocational Rehabilitation

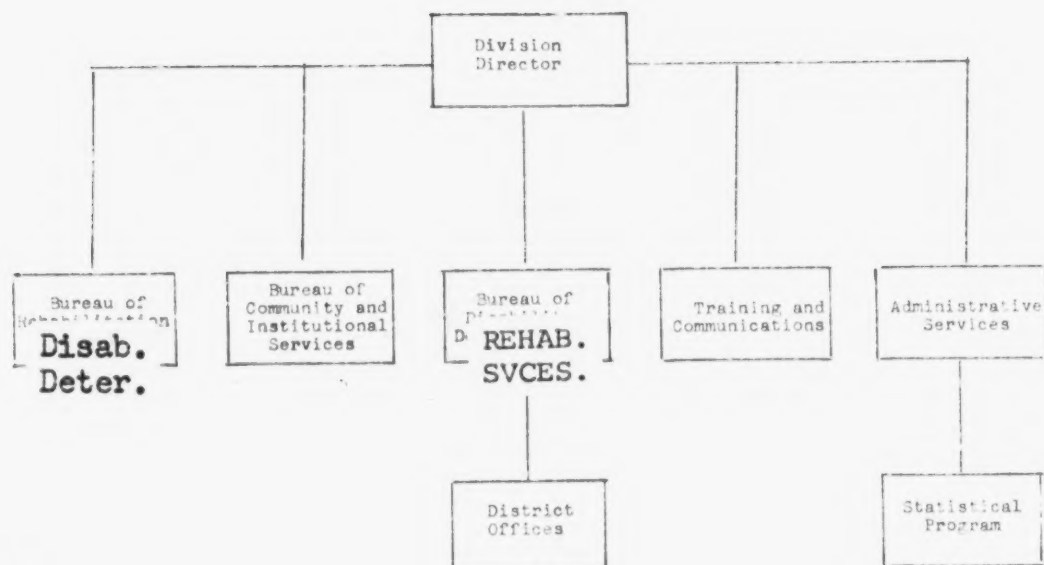
In the previous chapters the work of the Statistical Program has been discussed in relation to the needs of the elements of a Vocational Rehabilitation System. It is necessary, however, to place the Statistical Program within the formal organizational structure of a Vocational Rehabilitation Agency. In the case of Connecticut a recommendation of this nature was made in the Harbridge House Report of 1965.⁷ The recommendation called for the establishment of the position of Chief of Administrative Services whose duties would include the operation of a Statistical Program. The suggested place for the Statistical Program is shown in Organization Chart I on the following page.

The Statistical Program must be part of the functions of the Chief of Administrative Services, so that it is in a better position to act as a service group for any of the Bureaus or any of the special projects which may require its services. The Chart shown is essentially the one recommended by the Task Force Report, June 1967, of the Division of Vocational Rehabilitation of the State of Connecticut⁸ except that the term "Administrative Services" has been used instead of the term "Fiscal and Accounting" which appeared in the Task Force Report. The Task Force Report made no specific provision for the Statistical Program since it concerned itself primarily with the interrelationships of the various Bureaus within the Division.

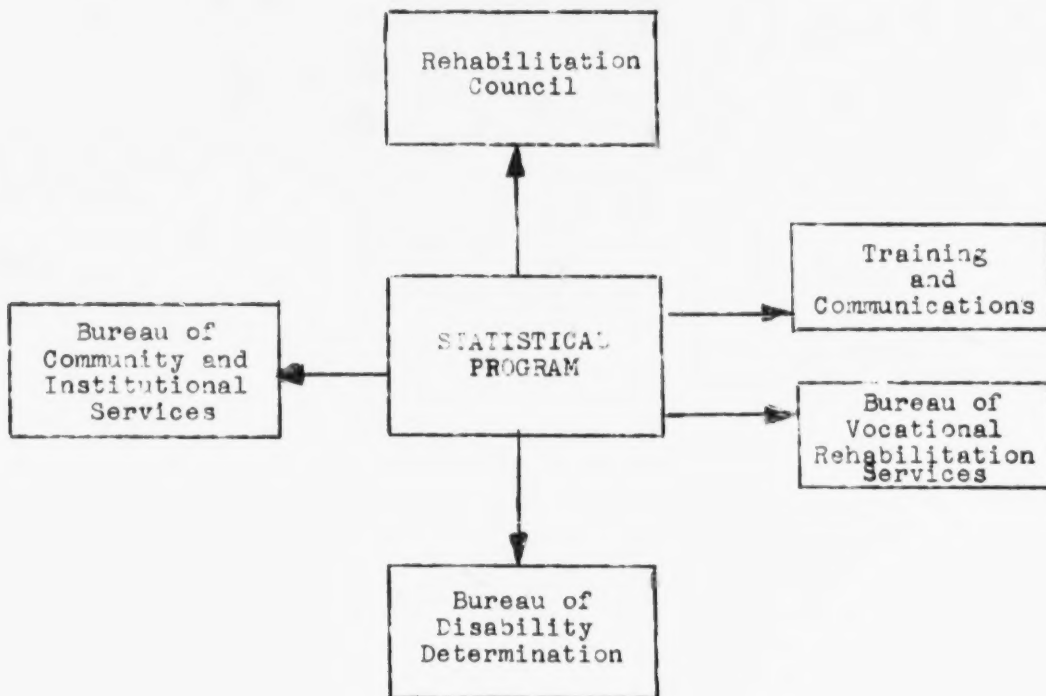
The manner in which the Statistical Program can serve the Division of Vocational Rehabilitation will be examined by noting the basic responsibilities of each of the Bureaus as delineated in the Task Force Report.⁹ These responsibilities will suggest or indicate the type of statistical information required by each of the Bureaus. It will also be noted, where applicable, that each Bureau corresponds to or is similar to the elements noted in the analysis of Vocational Rehabilitation as a system.

ORGANIZATION CHART I

CONNECTICUT DIVISION OF VOCATIONAL REHABILITATION



An effective Statistical Program has been shown to be a useful device both in the analysis of Vocational Rehabilitation as a system and in the analysis of the formal organization of the Division of Vocational Rehabilitation. The Statistical Program must act as a service group for the operating Bureaus, the group responsible for Training and Communications and the Rehabilitation Council as shown in Figure XII below.



THE STATISTICAL PROGRAM
A SERVICE AGENCY

FIGURE XII

The Bureau of Rehabilitation Services administers the program of direct services to disabled clients and is responsible for the maintenance of high standards of quality and quantity of such services throughout the State. It cooperates with local school boards and other governmental and private agencies in the servicing of clients. The Statistical Program would serve the needs of Rehabilitation Services by providing statistical information relating to the:

1. Job Placement Market
2. Incidence of Disabilities
3. Projection of Future Case Loads
4. Staff Training and Development
5. Evaluations of New Rehabilitation Techniques
6. Casework Quality Control
7. Projection of Manpower Needs

The Bureau of Rehabilitation Services corresponds to the element of Process Operation in the previous analysis of the Vocational Rehabilitation System. (See Figure VI, Chapter II)

The responsibilities of the Bureau of Community and Institutional Services are to administer the Facility Program for Workshops and Rehabilitation Centers as well as provide consultative assistance to the Bureau of Rehabilitation Services on the development of programs in schools, sheltered workshops, special projects, rehabilitation facilities, and other institutions.

The Statistical Program would serve the needs of Community and Institutional Services by providing statistical information relating to the:

1. Negotiation of Service and Cooperative Agreements
2. Inventory of Facilities
3. Projection of Future Needs for Facilities and Services
4. Planning and Development of Facilities

The Bureau of Community and Institutional Services corresponds to part of the element of Process Design in the previous analysis of the Vocational Rehabilitation System. (See Figure V, Chapter II)

The Statistical Program would serve the needs of the Bureau of Disability Determination by providing statistical information relating to:

1. The results of the Rehabilitation Process for clients referred to it by the Bureau of Disability Determination

2. Statistical data concerning the implementing of the terms of the formal agreement between the Social Security Administration and the Board of Education of the State of Connecticut.

It must be noted that the Bureau of Disability Determination is concerned primarily with applicants for Social Security who are applying under the disability provisions of the Federal Social Security legislation. The Bureau of Disability Determination does, however, refer some of these clients to the Rehabilitation Process, and, in these cases, statistical information must be reported for this group. However, the Bureau of Disability Determination is practically an autonomous unit and, in Connecticut, the Division of Vocational Rehabilitation provides it with accounting and personnel services.

The Statistical Program would serve the needs of the Training and Communications Group by providing statistical data for:

1. In-service training of new counselors and clerical personnel
2. Information for use by Counselors and Supervisors on Case Load Management
3. Monthly Newsletters for internal and external distribution
4. Publicity materials - primarily press releases
5. Public information Efforts of Divisional Staff.

The Bureaus noted in the previous discussion (Rehabilitation Services, Disability Determination, Community and Institutional Services, and the Training and Communications Group) provide services which constitute primarily the operation of the Vocational Rehabilitation System. However, the Statistical Program must provide information to those who are responsible for the Definition of the Problem, the Statement of the Objectives, and the Design of the Process.

In Connecticut, the group responsible for the elements of Problem Definition, Statement of the Problem, and Design of the Process should be the "Rehabilitation Council." The establishment of such a group was recommended in the Task Force Report of June 1967. Its basic responsibilities were defined in that Report as:

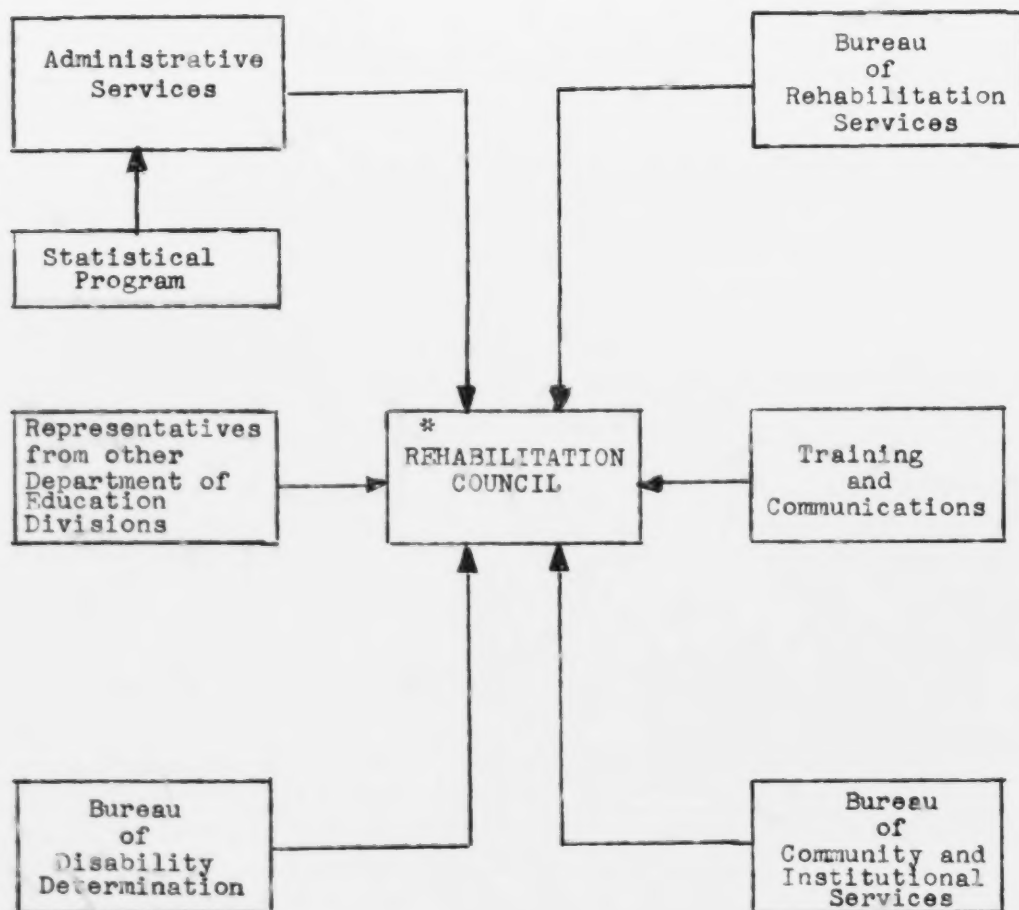
"To insure the development and quality of communication needed to facilitate the effective interaction of all Bureaus and

their staffs in fulfilling the overall responsibilities of the Division of Vocational Rehabilitation".¹⁰

In order to meet these responsibilities the Rehabilitation Council requires statistical information which will enable it to:

1. Act as a clearing house for all proposals originating inside or outside of the Division of Vocational Rehabilitation concerning planning and development of new or special programs
2. Advise the Division Director on priorities concerning the most efficient utilization of the Division's financial and personnel resources
3. Meet with representatives of other state agencies to review or establish co-operative arrangements.

The role of the Rehabilitation Council is shown in Figure XIII on the following page.



* Consists of Division Director as Chairman, the Bureau Chiefs, the Chief of Administrative Services, District Office Supervisors, Consultant in Training and Communications, and Representatives from other State Agencies involved in cooperative arrangements with the Division of Vocational Rehabilitation.

REHABILITATION COUNCIL

FIGURE XIII

The following positions are recommended to staff the Statistical Program:

1. Research Analyst
2. Research Assistant
3. Clerk-Typist.

The duties of each of these positions are explained below.

Research Analyst

Although the Statistical Program is under the general supervision of the Chief of Administrative Services it would be directly supervised by a Research Analyst, who is responsible for the compiling, analyzing, evaluating and reporting of statistical information. Among the specific duties of this position are:

1. Conducting statistical research in assigned areas
2. Making recommendations and projections based on findings of studies
3. Preparing narrative statements and explanations on findings
4. Recommending fields for statistical investigation
5. Developing reporting forms and instructions
6. Supervising the collection, classification, editing, coding and tabulation of data.

The Research Analyst would be required to have knowledge of statistical techniques; sources of statistical data; and economics and government. In addition, he must have ability to express himself effectively, in both written and spoken form, and the ability to understand and utilize automatic data processing techniques. The Research Analyst should be a college graduate, preferably with a major in Statistics, or a Social Science, who has had at least a year of experience in the field of Research and Statistics.

Research Assistant

The Research Assistant would work under the supervision of the Research Analyst. The Research Assistant is responsible for the collecting, coding and tabulating of statistical data. Among the specific duties of this position are:

1. Collecting and compiling data in suitable tabular or graphic form
2. Assisting in drawing up statistical reporting forms and procedures
3. Scheduling data gathering for special projects.

The Research Assistant would be required to have a knowledge of economics, government, and statistical techniques. He should also be aware of the techniques and capabilities of automatic data processing. The Research Assistant should have completed at least two years of college with training in Statistics or should have the equivalent experience.

Clerk-Typist

The Clerk-Typist would work under the supervision of the Research Assistant and would be responsible for the typing and clerical functions necessary to carry forward the daily operations of the Statistical Program. As required the Clerk-Typist would be called upon to assist the Research Assistant and the Research Analyst in the performance of their duties.

The three staff positions noted above would be adequate for the Division of Vocational Rehabilitation in the State of Connecticut. The staff would be sufficient to cover the present work load of the State and, with maximum utilization of automatic data processing techniques, would be sufficient for the planned expansion of the Case Load.

Suggestion for a Future Study - Development of a Cost Matrix for Case Service Costs

The Statistical Program must also develop methods or techniques for estimating expenditures for particular disability categories. While the annual reports submitted to the Federal Vocational Rehabilitation Administration call for data on costs incurred by number of clients in particular disability categories, these data are limited in their usage because of their broad character. A suggested technique for forecasting costs is examined here with the anticipation that the technique will be analyzed in greater detail as part of the activity of an ongoing Statistical Program.

Among the one hundred rehabilitated cases (Status 26 - Closed Rehabilitated) chosen from closures in Connecticut in October - December, 1966, twenty-two cases were in the Orthopedic category. The total Case Service Cost reported for these cases on the Form R-300: Case Service Report--State-Federal Program of Vocational Rehabilitation was \$13,521. The average Case Service Cost of the twenty-two cases was \$615.00. If the assumption is made that the thirty-five cases remaining in the Orthopedic category, as shown in Report No. 1: Case Load - Personal Data, have the same characteristics as the rehabilitated cases then an estimate of the Case Service Cost for the Orthopedic category of the Case Load would be $35 \times \$615 = \$21,525$. However, this assumption is dangerous because the average cost (\$615) covers a wide group of variable characteristics of the rehabilitated cases, and it is not certain that the rehabilitated Orthopedic cases have the same characteristics as the remaining Orthopedic cases in the Case Load.

To derive a better estimate of the Case Service Costs of the thirty-five remaining cases in the Orthopedic category these cases should be analyzed according to their characteristics correlated with previously recorded costs of cases in the Orthopedic disability category. In the following calculations twenty-two rehabilitated cases in the Orthopedic category will be analyzed according to several of the more important variables which determine rehabilitation costs. The variables, which are limited to four, for illustrative purposes only, are: Age, Sex, Race and Education of the clients. The suggested steps follow:

1. Calculate the average Case Service Cost for each rehabilitated client by Age Group within the Orthopedic category:

<u>Age</u>	<u>Total Cost</u>		<u>Number Rehab.</u>		<u>Average Case Service Cost</u>
16-19	\$ 4,612	+	4	=	\$ 1,653
20-34	8,168	+	10	=	817
35-44	0	+	1	=	0
45-64	741	+	7	=	106
	<u>\$13,521</u>		<u>22</u>		

2. Calculate the average Case Service Cost for each rehabilitated client by Sex within the Orthopedic category:

<u>Sex</u>	<u>Total Cost</u>		<u>Number Rehab.</u>		<u>Average Case Service Cost</u>
M	\$10,707	+	15	=	\$ 714
F	2,814	+	7	=	402
	<u>\$13,521</u>		<u>22</u>		

3. Calculate the average Case Service Cost for each rehabilitated client by Race within the Orthopedic category:

<u>Race</u>	<u>Total Cost</u>		<u>Number Rehab.</u>		<u>Average Case Service Cost</u>
W	\$13,032	+	18	=	\$ 724
N	489	+	4	=	122
	<u>\$13,521</u>		<u>22</u>		

4. Calculate the average Case Service Cost for each rehabilitated client by Education level within the Orthopedic category:

<u>Education</u>	<u>Total Cost</u>		<u>Number Rehab.</u>		<u>Average Case Service Cost</u>
1-7	\$ 1,245	+	6	=	\$ 208
8	5,417	+	4	=	1,604
9-11	5,533	+	9	=	615
12	6	+	1	=	6
13-15	1,320	+	1	=	1,320
16+	-	+	-	=	-
xx	0	+	1	=	0
	<u>\$13,521</u>		<u>22</u>		

The average Case Service Costs associated with these selective characteristics can then be compiled into a Matrix, as shown below:

COST MATRIX

Average \$ Costs Associated with Orthopedic Disabilities by:

<u>Characteristic</u>	<u>Average \$ Costs</u>
<u>Age</u>	
16-19	\$ 1,653
20-34	817
35-44	0
45+	106
<u>Sex</u>	
M	\$ 714
F	402
<u>Race</u>	
W	\$ 724
N	122
<u>Education</u>	
1-7	\$ 208
8	1,604
9-11	615
12	6
13-15	1,320
16+	- -
xx	- -

These costs by characteristics, shown in the Matrix, can then be applied to the thirty-five cases reported in the Orthopedic category in Report No. 1; Case Load - Personal Data, and a calculation can be made which yields a more realistic estimate of the Case Service Cost for that group. The characteristics and costs associated with this group of thirty-five clients are as follows:

	<u>Age</u>	<u>Number in Orth. Category</u>		<u>Average Cost for Characteristic</u>		<u>Total</u>
1.	16-19	6	x	\$ 1,653	=	\$ 9,918
	20-34	8	x	817	=	6,536
	35-44	6	x	0	=	0
	45-64	14	x	106	=	1,484
	65	1	x	0	=	0
		<u>35</u>				<u>17,939</u>

Case Service Costs (based on Age) \$17,939

	<u>Sex</u>	<u>Number in Orth. Category</u>		<u>Average Cost for Characteristic</u>		<u>Total</u>
2.	M	24	x	\$ 714	=	\$17,136
	F	11	x	402	=	4,422
		<u>35</u>				<u>21,558</u>

Case Service Costs (based on Sex) \$21,558

	<u>Race</u>	<u>Number in Orth. Category</u>		<u>Average Cost for Characteristic</u>		<u>Total</u>
3.	W	32	x	\$ 724	=	\$23,168
	N	3	x	489	=	1,467
		<u>35</u>				<u>24,635</u>

Case Service Costs (based on Race) \$24,635

	<u>Education</u>	<u>Number in Orth. Category</u>		<u>Average Cost for Characteristic</u>		<u>Total</u>
4.	1-7	3	x	\$ 208	=	\$ 624
	8	6	x	1,604	=	9,624
	9-11	12	x	615	=	7,380
	12	10	x	6	=	60
	13-15	2	x	1,320	=	2,620
	16+	2	-	-	=	-
	xx	-	-	-	=	-
		<u>35</u>				<u>20,308</u>

Case Service Costs (based on Education) \$20,308

A range of possible Case Service Costs based on specific characteristics can be summarized as shown below:

Age	\$17,938
Education	20,308
Sex	21,558
Race	<u>24,635</u>
Total	\$84,439

In order, however, to arrive at a single estimate of Case Service Costs the median of the four costs could then be calculated. This yields an estimate of \$20,933. It would also be possible to take the average of these four costs since the total of these costs \$84,439 represents "total" costs calculated for four different characteristics. This yields \$21,110 which represents an estimate of Case Service Costs for the thirty-five cases in the Orthopedic category. The estimates of \$20,933 and \$21,110, derived from an examination of the characteristics of Age, Sex, Race and Education, do not differ substantially from an estimate of \$21,525 derived by simply multiplying the number in the Orthopedic category, 35, by the historical average cost of \$615 per case. This suggests that the composition of the rehabilitated cases and the remaining cases are similar. If, on the other hand, the characteristics of the remaining cases were sufficiently different from the rehabilitated cases, a sharp difference would be noted between these two estimates.

The technique discussed above is intended to furnish more realistic estimates on Case Service Costs for particular disability categories. It can also be used to estimate costs for a particular case. For example, a client in the Orthopedic category who is: 25 Years of Age; Male; White; and who has completed eleven years of Education has the following cost data associated with his characteristics:

Age	\$ 817
Sex	714
Race	724
Education	<u>615</u>
Total	\$2,870

These costs which are taken from the Cost Matrix total \$2,870. To derive the estimated Case Service Costs for the client, \$2,870 is divided by 4 which yields \$718. Although this is an estimate it must be noted that it does take into consideration the variables of Age, Sex, Race, and Education which affect the costs for particular cases in the Orthopedic category. As such, it can form the basis for a more realistic assessment of the possible costs of services for this individual.

The technique described above will be studied in further detail when the rehabilitation data for the full year are available.

Although this illustration used the Orthopedic category as one large group, it would be more desirable to break this category, or any other category, into smaller groups. If sufficient data are then available for these more closely defined groups, the accuracy of this estimating technique would be significantly improved.

The Use of Automatic Data Processing Techniques

An effective Statistical Program must have the ability to utilize data processing techniques which are consistent with the size and nature of the problem to be solved. These techniques may include simple manual methods, the utilization of desk calculators, the usage of Electrical Accounting Machinery (Punched Card Equipment), and Electronic Computers.

The decision concerning which of these techniques to use should rest on the nature of the data to be processed. Automatic data processing techniques (taken here to include both Electrical Accounting Machines and Electronic Computers) are most efficiently used when the data to be processed have the following, general characteristics:

1. The data must be accurate and the categories into which these data are placed must be meaningful. If, for example, clients are not classified into the proper disability category, then no amount of sophisticated data processing techniques will yield meaningful results.
2. The data must be of sufficient complexity so that a computer is required for its analysis. In such a case, the volume of data may be limited and it is the complexity of the data which warrants the use of automatic data processing equipment. An analysis of Costs by clients' characteristics would fall into this category.
3. The data to be processed is recurring and is large in volume. Typical examples of this in Vocational Rehabilitation are studies of the Case Load, Closures, and Costs incurred.

4. The information generated by the Statistical Program must be available in time to serve the purposes of management control. In this respect the speed of automatic data processing gives it an immediate advantage over the slower manual methods. Again, it must be emphasized that speed without accuracy is valueless.

The personnel of the Statistical Program should be aware of the capabilities and limitations of each of the suggested data processing techniques ranging from the manual methods to the advanced computer systems. It is not anticipated that the personnel, especially in the smaller Vocational Rehabilitation units, would be Computer Programmers. In Connecticut, this service is furnished by the Data Processing Division of the Comptroller's Department.

The Statistical Analyst should also be aware of the latest developments in the field of Automatic Data Processing since these may affect the operation of the Statistical Program. Further developments of Information Retrieval Systems, particularly in the medical field, may have applicability for Vocational Rehabilitation. For research purposes the growing emphasis on Time Sharing in computer utilization will also be of interest. References to these fields will be found in the Bibliography.

CONCLUSION

An effective Statistical Program can and must serve Vocational Rehabilitation by providing information for those who are responsible for the:

1. Statement of the Problem
2. Establishment of the Objectives
3. Process Design
4. Process Operation.

The Statistical needs of Vocational Rehabilitation can also be indicated by showing the methods by which the Statistical Program can serve the needs of a Vocational Rehabilitation Agency composed of the following:

1. Bureau of Vocational Rehabilitation Services
2. Bureau of Disability Determination
3. Bureau of Community and Institutional Services
4. Training and Communications
5. Rehabilitation Council.

Given the needs for an effective Statistical Program, the following factors must be considered in relation to the information it produces:

Timeliness

It is mandatory that the statistical information produced be timely. If the statistical information is intended for overall program determination, the events reflected can be shown in statistical reports prepared on a fiscal year basis. If, on the other hand, the statistical information is to be used for immediate management control it must be reported within a time period which will permit its use for control purposes.

Status, Flow, and Exception Reporting

A further consideration in the timeliness of information is the use of Status, Flow, and Exception type reports. Status Reports concern themselves with information at a fixed point in time, such as the Case Load at the end of a fiscal year. Flow Reports are concerned with the measurement of differences between two points in time, such as the number of clients rehabilitated in a particular time period. Exception Reports concern themselves only with those situations which deviate from an established standard. In Exception Reporting, the information should be presented as soon as possible after the event in order to control the deviation which is occurring. Exception Reporting relies heavily upon the establishment of realistic standards in such areas as Case Load Management, Personnel Utilization, and Case Service Costs. The Statistical Program must furnish the data which will

enable the establishment of these standards.

Minimum Cost

Statistical information must be generated at a minimum cost. This minimum cost, however, must not be measured by dollar costs as the sole criterion. The minimum cost must be determined by the actual, validated need for a particular set of statistics. If the information is intended for internal management control, then the benefits achieved by that control must outweigh the cost of the control. If the information is needed for the Definition of the Problem or the Statement of the Objectives then these costs must be considered in relation to the value attached to the further refinement and validity of the Definition of the Problem and the Statement of the Objectives.

Maximum Use

Maximum use must be made of the statistics. This requires usage of statistics at all of the professional levels where they are applicable. Maximum use also requires maximum dissemination of the statistical information. This statistical information must be a synthesis of the salient points and these points must be presented in a manner easily understood by the audience to be reached. Unnecessarily complicated statistical analysis and presentation only alienate these groups. Although the reports cited earlier have been shown in tabular form, much of the data lends itself to graphical analysis. These techniques should be used as widely as possible. When heavy emphasis is placed on numeric tabulations, efforts should be made to emphasize significant items so that the user's attention is called quickly to the most important parts of the table.

External and Internal Information

The Statistical Program must collect information from external sources which will be useful to Vocational Rehabilitation. The Program must also furnish to the outside environment as much information as required. It must establish contact with other State Agencies, such as Welfare and the State Employment Service, so that it can receive data from these agencies which have a bearing on the problem of Vocational Rehabilitation. In addition, the Statistical Program must collect pertinent data from Federal and private sources which affect Vocational Rehabilitation.

Objectivity

Statistical data must always be free of bias and must be meaningful both in terms of the phenomena measured and the cross-comparability of the data which have been aggregated or summarized. The effective summarization of statistical data requires the establishment of classes or categories. Statistics concerned with human problems of a social, mental, or physical nature are often aggregates which may represent the entire Case Load or a particular segment.

The classes or categories are meaningful as groups, even though individuals within that group may not conform to the average, because the summarization or aggregation of these data provide insight into the extent and nature of particular disability problems.

Research and Planning

The Statistical Program must have the capability of providing statistical information which will serve the long-range planning needs as well as the short-term planning needs of Vocational Rehabilitation. In long-range planning the concern is primarily with the number and composition of future Case Loads and the planning of Rehabilitation Facilities. In short-term planning the primary interest lies in providing useful information for current Case Load Management and Facilities Utilization.

In addition to the above needs the Statistical Program must provide quantitative data which will be useful in the further examination of the technique of Cost Benefit Analysis which was defined in Chapter III as "the measurement of the total benefits of a program in dollar terms against the cost of that program." The Statistical Program must be used as a tool to investigate the assignment of dollar values to benefits which have been previously categorized as "intangible benefits." The proper assignment of these dollar values strengthens the economic reasons for the existence of Vocational Rehabilitation.

The Final Consideration

A Statistical Program cannot exist in isolation within a Vocational Rehabilitation agency. Its very presence should be indicative of a strong desire on the part of the agency's management to utilize the information produced by the Statistical Program to systematize present operations, maximize the "return" on the Vocational Rehabilitation dollar and plan for future operations. The Statistical Program can be an effective tool to achieve these goals. It is a device which, when properly implemented, promotes a more purposeful and meaningful rehabilitation process. In this role, the Statistical Program helps the Vocational Rehabilitation Process achieve - efficiently and economically - its desired economic, social, and humanitarian goals.

APPENDIX A

FOOTNOTES

1. Brandeis University, The Florence Heller Graduate School for Advanced Studies in Social Welfare, Papers in Social Welfare No. 2, "The Role of Statistics in State Vocational Rehabilitation Agencies", March 21-24, 1960.
2. Herbert A. Simon, The New Science of Management Decision, (New York: Harper and Brothers, 1960), p.2
3. Charles Bonini, Robert K. Jaedicke, and Harvey M. Wagner, Management Controls, (New York: McGraw Hill Book Co. 1964) p.9.
4. R.A. Johnson, Fremont E. Kast, James E. Rosenzweig, The Theory and Management of Systems, (New York: McGraw Hill Book Co. 1963) p.56.
5. Statistics in Vocational Rehabilitation, (San Francisco State College, San Francisco, California, November, 1966) p.28.
6. Ibid., 29.
7. An Administrative Study - Division of the Vocational Rehabilitation Connecticut State Department of Education, (Harbridge House, Inc., Boston, Massachusetts, 1966) p.59.
8. Task Force Report, (Division of Vocational Rehabilitation, State Department of Education, State of Connecticut, Hartford, Connecticut, June, 1967) p.7.
9. Ibid., p.1.
10. Ibid., p.3.

APPENDIX B

76 A

BIBLIOGRAPHY

Note: The Bibliography, listed below, is shown by subject matter or content of the publication. The subjects are listed in the same sequence as they occur in this Report. The Bibliography is representative of the materials which would be useful to develop a Model Statistical Program.

Chronological Listing of Principal Progress Reports for Model Statistical Program - Project No. R.D. 855 (1963 - 1966)

1. Research Project Report, Bureau of Vocational Rehabilitation, State of Connecticut, February, 1963.
2. Research Project Report, Office of Vocational Rehabilitation, Washington, D.C., March, 1963.
3. Research Project Report, Office of Vocational Rehabilitation, Washington, D.C., February, 1964.
4. Research Project Report (1962 - 1964), Vocational Rehabilitation Administration, Washington, D.C., August, 1964.
5. Research Project Report, Vocational Rehabilitation Administration, Washington, D.C., March, 1965.
6. Research Project Report, Vocational Rehabilitation Administration, Washington, D.C., March, 1966.

Statistical Analysis and Sources of Statistics

1. Stockton, J.R., Business Statistics. Cincinnati: Southwestern Publishing Company, 1962.
2. Natrella, G.M., Experimental Statistics. Washington, D.C.: U.S. Department of Commerce, National Bureau of Standards, August, 1963.
3. The Role of Statistics in State Vocational Rehabilitation Agencies. Papers in Social Welfare No. 2, Brandeis University, The Florence Heller Graduate School, Waltham, Massachusetts: 1960.
4. Statistics in Vocational Rehabilitation. San Francisco State College, San Francisco, California: November, 1966.

5. Vital and Health Statistics Data from the U.S. National Health Survey - Disability Among Persons in the Labor Force by Employment Status. Public Health Service Publication No. 1000, Series 10 - No. 7, U.S. Department of Health, Education, and Welfare, Washington, D.C.: March, 1964.
6. Vital and Health Statistics Data from the U. S. National Health Survey - Chronic Conditions and Activity Limitations. Public Health Publication No. 1000, Series 10, No. 17, U.S. Department of Health, Education, and Welfare, Washington, D.C.: May, 1965.
7. Health Statistics from the U.S. National Health Survey - Selected Impairments by Etiology and Activity Limitation. Public Health Service Publication No. 584-B35, U.S. Department of Health, Education, and Welfare, Washington, D.C.: July, 1962.
8. State Vocational Rehabilitation Agency Program Data Fiscal Year 1966. U.S. Department of Health, Education and Welfare, Vocational Rehabilitation Administration, Washington, D.C.: May 1967.
9. Dictionary of Occupational Titles, Volumes I and II, 3rd. ed. U.S. Government Printing Office, Washington, D.C.: 1965.
10. Labor Market Letters, State of Connecticut, State Employment Service, Hartford, Connecticut.
11. Public Welfare Trends, State of Connecticut, State Welfare Department, Hartford, Connecticut.

Vocational Rehabilitation in Connecticut

1. State of Connecticut. 25 years of Vocational Rehabilitation Connecticut State Department of Education, Hartford, Connecticut: 1956.
2. Task Force Report Division of Vocational Rehabilitation. Connecticut State Department of Education, Hartford Connecticut: 1967.
3. Connecticut State Plan for Vocational Rehabilitation. Connecticut State Board of Education, Hartford, Connecticut: June, 1966.
4. An Administrative Study - Division of the Vocational Rehabilitation, Connecticut State Department of Education. Boston, Massachusetts: Harbridge House, Inc., 1966.
5. United States. Public Law 89 - 333, 89th Congress, H.R. 8310. November 8, 1965.

6. United States. Federal Register, Volume 31, #9. January 4, 1966. Revision of Regulations for Vocational Rehabilitation Administration.

Management and Systems

1. Boulding, Kenneth E., "General Systems Theory: The Skeleton of Science," Management Science, Volume 2, No. 3, April, 1956.
2. Johnson, R.A., Kast, F.E., and Rosenzweig, J.E. The Theory and Management of Systems. New York: McGraw Hill, 1963.
3. Simon, Herbert A., The New Science of Management Decision. New York: Harper and Brothers Publishers, 1960.
4. McKean, R.W. Efficiency in Government Through Systems Analysis. New York: John Wiley and Sons, 1958.

Cost Benefit Analysis

1. Prest, A.R. and Turvey, R., "Cost Benefit Analysis: A Survey," Economic Journal, December 1965, Volume LXXV.
2. Borus, M.E., A Benefit Cost Analysis of the Economic Effectiveness of Retraining the Unemployed. Boston: Federal Reserve Bank of Boston, July 1966.
3. Becker, Gary S., Human Capital. New York: Columbia University Press, 1964.

Automatic Data Processing

1. International Business Machines. General Introduction Manual: Introduction to IBM Data Processing Systems (#F22-6517). White Plains, New York: 1966.
2. International Business Machines. An Introduction to IBM Punched Card Data Processing (#F20-0074-0). White Plains, New York: 1966.
3. Lee, R.M., A Short Course in Fortran IV. New York: McGraw Hill, 1967.
4. Popell, S.D., Computer Time Sharing. Englewood Cliffs, New Jersey: Prentice Hall, 1967.